GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET
HYDERABAD-500016

(Autonomous – Affiliated to Osmania University)

Mapping of the Courses for the year 2017-18

2017-18
L.S

9.3 Contributions of anthropology to the understanding of regionalism, communalism and ethnic and political movements.

BOTANY

PAPER-I

1. **Microbiology and Plant Pathology :**

Structure and reproduction/multiplication of viruses,viroids, bacteria, fungi and mycoplasma; Applications of microbiology in agriculture, industry, medicine and in control of soil and water pollution; Prion and Prion hypothesis.

Important crop diseases caused by viruses, bacteria, mycoplasma, fungi and nematodes; Modes of infection and dissemination; Molecular basis of infection and disease resistance/defence; Physiology of parasitism and control measures. Fungal toxins. Modelling and disease forecasting; Plant quarantine.

2. **Cryptogams :**

Algae, fungi, lichens, bryophytes, pteridophytes-structure and reproduction from evolutionary viewpoint; Distribution of Cryptogams in India and their ecological and economic importance.

3. **Phanerogams :**

Gymnosperms : Concept of Progymnosperms. Classification and distribution of gymnosperms. Salient features of Cycadales, Ginkgoales, Coniferales and Gnetales, their structure and reproduction. General account of Cycadofilicales, Bennettitales and Cordiaitailes; Geological time scale; Type of fossils and their study techniques.

Angiosperms : Systematics, anatomy, embryology, palynology and phylogency.

Taxonomic hierarchy; International Code of Botanical Nomenclature; Numerical taxomomy and chemotaxomomy; Evidence from anatomy, embryology and palynology.

Origin and evolution of angiosperms; Comparative account of various systems of classification of angiosperms; Study of angiospermic families— Mangnoliaceae, Ranunculaceae, Brassicaceae, Rosaceae, Fabaceae, Euphorbiaceae, Malvaceae, Dipterocarpaceae, Apiaceae, Asclepiadaceae, Verbenaceae, Solanaceae, Rubiaceae, Cucurbitaceae, Asteraceae, Poaceae, Arecaceae, Liliaceae, Musaceae and Orchidaceae.

Stomata and their types; Glandular and non-glandular trichomes; Unusual secondary growth; Anatomy of C_3 and C_4 plants; Xylem and phloem differentiation; Wood anatomy.

Development of male and female gametophytes, pollination, fertilization; Endosperm—its development and function. Patterns of embryo development; Polyembroyony, apomixes; Applications of palynology; Experimental embryology including pollen storage and test-tube fertilization.

4. **Plant Resource Development :**

Domestication and introduction of plants; Origin of cultivated plants, Vavilov's centres of origin. Plants as sources for food, fodder, fibres, spices, beverages, edible oils, drugs,

narcotics, insecticides, timber, gums, resins and dyes; latex, cellulose, starch and its products; Perfumery; Importance of Ethnobotany in Indian context; Energy plantations; Botanical Gardens and Herbaria.

5. **Morphogenesis :**

Totipotency, polarity, symmetry and differentiation; Cell, tissue, organ and protoplast culture. Somatic hybrids and Cybrids; Micropropagation; Somaclonal variation and its applications; Pollen haploids, embryo rescue methods and their applications.

PAPER-II

1. **Cell Biology :**

Techniques of cell biology. Prokaryotic and eukaryotic cells—structural and ultrastructural details; Structure and function of extracellular matrix (cell wall) and membranes-cell adhesion, membrane transport and vesicular transport; Structure and function of cell organelles (chloroplasts, mitochondria, ER, dictyosomes ribosomes, endosomes,lysosomes, peroxisomes; Cytoskelaton and microtubules; Nucleus, nucleolus, nuclear pore complex; Chromatin and nucleosome; Cell signalling and cell receptors; Signal transduction Mitosis and meiosis; molecular basis of cell cycle. Numerical and structural variations in chromosomes and their significance; Chromatin organization and packaging of genome; Polytene chromosomes; B-chromosomes—structure, behaviour and significance.

2. **Genetics, Molecular Biology and Evolution :**

Development of genetics, and gene versus allele concepts (Pseudoalleles); Quantitative genetics and multiple factors; Incomplete dominance, polygenic inheritance, multiple alleles; Linkage and crossing over of gene mapping including molecular maps (idea of mapping, function); Sex chromosomes and sex-linked inheritance; sex determination and molecular basis of sex differentiation; Mutations (biochemical and molecular basis); Cytoplasmic inheritance and cytoplasmic genes (including genetics of male sterility).

Structure and synthesis of nucleic acids and proteins; Genetic code and regulation of gene expression; Gene silencing; Multigene families; Organic evolution-evidences, mechanism and theories.

Role of RNA in origin and evolution.

3. **Plant Breeding, Biotechnology and Biostatistics :**

Methods of plant breeding—introduction, selection and hybridization (pedigree, backcross, mass selection, bulk method); Mutation, polyploidy, male sterility and heterosis breeding. Use of apomixes in plant breeding; DNA sequencing; Genetic engineering—methods of transfer of genes; Transgenic crops and biosafety aspects; Development and use of molecular markers in plant breeding; Tools and techniques—probe, southern blotting, DNA fingerprinting, PCR and FISH. Standard deviation and coefficient of variation (CV). Tests of significance (Z-test, t-test and chi-square tests). Probability and distributions (normal, binomial and Poisson). Correlation and regression.

4. **Physiology and Biochemistry :**

Water relations, mineral nutrition and ion transport, mineral deficiencies.

Photosynthesis—photochemical reactions, photophosphorylation and carbon fixation pathways; C_3, C_4 and CAM pathways; Mechanism of pholem transport, Respiration (anerobic and aerobic, including fermentation)—electron transport chain and oxidative phosphorylation; Photorespiration; Chemiosmotic theory and ATP synthesis; Lipid metabolism; Nitrogen fixation and nitrogen metabolism. Enzymes, coenzymes; Energy transfer and energy conservation. Importance of secondary metabolites. Pigments as photoreceptors (plastidial pigments and phytochrome). Plant movements; Photoperiodism and flowering, vernalization, senescence; Growth substances—their chemical nature, role and applications in agri-horticulture; growth indices, growth movements. Stress physiology (heat, water, salinity, metal); Fruit and seed physiology. Dormancy, storage and germination of seed. Fruit ripening—its molecular basis and manipulation.

5. **Ecology and Plant Geography :**

Concept of ecosystem; Ecological factors. Concepts and dynamics of community; Plant succession. Concepts of biosphere; Ecosystems; Conservation; Pollution and its control (including phytoreme-diation); Plant indicators; Environment (Protection) Act.

Forest types of India—'Ecological and ecomomic importance of forests, afforestation, deforestation and social forestry; Endangered plants, endemism IUCN categories, Red Data Books; Biodiversity and its conservation; Protected Area Network; Convention of Biological Diversity, Farmers' Rights; and Intellectual Property Rights; Concept of Sustainable Development; Biogeochemical cycles. Global warming and climatic change; Invasive species; Environmetal Impact Assessment; Phytogeographical regions of India.

CHEMISTRY

PAPER-I

1. **Atomic Structure :**

Heisenberg's uncertainty principle Schrodinger wave equation (time independent); Interpretation of wave function, particle in one- dimensional box, quantum numbers, hydrogen atom wave functions; Shapes of s, p and d orbitals.

2. **Chemical bonding :**

Ionic bond, characteristics of ionic compounds, lattice energy, Born-Haber cycle; covalent bond and its general characteristics, polarities of bonds in molecules and their dipole moments; Valence bond theory, concept of resonance and resonance energy; Molecular orbital theory (LCAO method); bonding H_2 +, H2 He_2 + to Ne_2, NO, CO, HF, CN^-, Comparison of valence bond and molecular orbital theories, bond order, bond strength and bond length.

3. **Solid State :**

Crystal systems; Designation of crystal faces, lattice structures and unit cell; Bragg's law; X-ray diffraction by crystals; Close packing, radius ratio rules, calculation of some limiting radius ratio values; Structures of NaCl, ZnS, CsCl, CaF_2; Stoichiometric and

B.Sc (CBCS) Botany- I year
Semester-I - Paper-I
Microbial Diversity of Lower Plants

DSC - 1A (4 hrs./week)

Theory Syllabus

Credits-4
(60 hours)

UNIT - I

1. Brief account of Archaebacteria, Actinomycetes. (4h)
2. Cyanobacteria: General characters, cell structure, thallus organisation and their significance as biofertilizers with special reference to *Oscillatoria, Nostoc* and *Anabaena.* (6h)
3. Lichens: Structure and reproduction; ecological and economic importance. (5h)

UNIT- II

4. Viruses: Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro. (7h)
5.. Bacteria: Structure, nutrition, reproduction and economic importance. An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice.
Role of Bacillus thirungenesis in cultivation of Bt.cotton and Bt. Brinjal (8h)
6. General account of Mycoplasma with reference to Little leaf of brinjal and Papaya leaf curl

UNIT-III

7. General characters, structure, reproduction and classification of algae (Fritsch) and thallus organization in algae. (3h)
8. Structure and reproduction of the following:
Chlorophyceae- *Volvox, Oedogonium* and*Chara.* (5h)
Phaeophyceae-*Ectocarpus* (2h)
Rhodophyceae- *Polysiphonia.* (3h)
9. Economic importance of algae in Agriculture and Industry. **Biofertilizers** (2h)

UNIT-IV

10. General characters and classification of fungi (Ainsworth). (3h)
11. Structure and reproduction of the following:
(a) Mastigimycotina- *Albugo*
(b) Zygomycotina- *Mucor*
(c) Ascomycotina- *Saccharomyces* and *Penicillium.*
(d) Basidiomycotina- *Puccinia*
(e) Deuteromycotina- *Cercospora.* (10h)
12. Economic importance of fungi in relation to mycorrhizae and mushrooms. General account of mushroom cultivation (2h)

7/4/17

CHAIRPERSON
B.O.S. IN BOTANY
OSMANIA UNIVERSITY
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7/4/17

7/4/17

7/4/17

D. Mamatha.

B.Sc (CBCS) Botany- I year
Semester-II - Paper-II
Bryophytes, Pteridophytes, Gymnosperms and Paleobotany

DSC-1B (4 hrs./week)

Theory Syllabus

Credits- 4
(60 hours)

UNIT-I

1. Bryophytes: General characters and classification. (3h)
2. Structure, reproduction, life cycle and systematic position of *Marchantia, Anthoceros* and *Polytrichum.* (Development stages are not required). (10h)
3. Evolution of Sporophyte in Bryophytes. (2h)

UNIT-II

4. Pteridophytes: General characters and classification (Sporne's) (3h)
5. Structure, reproduction, life cycle and systematic position of *Rhynia, Lycopodium, Equisetum* and *Marsilea.* (10h)
6. Stelar evolution, heterospory and seed habit in Pteridophytes. (2h)

UNIT-III

7. Gymnosperms: General characters, structure, reproduction and classification (Sporne's). (4h)
8. Distribution and economic importance of Gymnosperms. (3h)
9. Morphology of vegetative and reproductive parts, systematic position and life cycle of *Pinus* and *Gnetum* . (8 h)

UNIT-IV.

10. Palaeobotany: Introduction, Fossils and fossilization ; Importance of fossils. (8 h)
11. Geological time scale; (4 h)
12. Bennettitales: General account. (3 h)

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D. Vasudha

D. Mamatha

GOVERNMENT DEGREE COLLEGE FOR WOMEN BEGUMPET –HYDERABAD.
(AUTONOMOUS) CBCS
DEPARTMENT OF BOTANY
Syllabus-Total Hrs of Teaching 60 @ 4HRS/WEEK
B.sc. III YEAR -SEMESTER-V -PAPER-V(Advanced core) CBCS SYLLABUS
(CELL BIOLOGY AND GENETICS)

CELL BIOLOGY:-

UNIT-I (12HRS)

1.PLANT CELL ENVELOPS:- Ultra structure of cell wall, molecular organization of cell membranes.

2. NUCLEUS:- Ultrastructure, Nucleic acids- structure and replication of DNA ; types and functions of RNA.

UNIT-II (15HRS)

3. CHROMOSOMES:- Morphology , Organization of DNA in a chromosome, Euchromatin and heterochromatin Karyotype.

4. SPECIAL TYPE OF CHROMOSOMES:- Lamp brush, polygene and B- chromosomes.

. CELL DIVISION:- Cell cycle and its regulation; Mitosis, Meiosis and their significance,**Hypertrophy and hyperplasia.**

GENETICS:-

UNIT-III (15HRS)

5. MENDELISM:- Laws of inheritance, Genetic interactions-Epistasis,complimentary,supplementary and Inhibitory genes.

6. LINKAGE AND CROSSING OVER:- A brief account ,**Sex – Linked inheritance** , construction of genetic maps,2-point and 3-point Test cross data.

UNIT-IV (18HRS)

7. MUTATIONS :- Chromosomal aberrations-structural and numerical changes,**Down's syndrome**, Gene mutations.

8. GENE EXPRESSION: - organization of gene, transcription, translation, mechanism and regulation Of gene expression in prokaryotes(Lac and Trp operon).

9. EXTRA NUCLEAR GENOME:- Mitochondrial and plastid DNA , Plasmids.

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D. Mamatha.

7/4/2017

GOVERNMENT DEGREE COLLEGE FOR WOMEN BEGUMPET –HYDERABAD.

(AUTONOMOUS) CBCS

Syllabus-Total Hrs of Teaching 45

B.sc. III YEAR -SEMESTER-V -PAPER-V I

Advanced Elective-1

(ECOLOGY AND BIODIVERSITY)

ECOLOGY:-

UNIT-I- (15 Hrs)

1. CONCEPTS and COMPONENETS OF ECOSYSTEM:- Energy flow , food chains, food webs, ecological pyramids,
2. PLANTS AND ENVIRONMENT:-Ecological factors-Climatic (light and temperature),edaphic and biotic Ecological adaptations of plants

POPULATION ECOLOGY:- Natality, mortality, growth curves, ecotypes and ecads.

UNIT-II- (10Hrs)

3. COMMUNITY ECOLOGY:- Frequency, density, cover, lifeforms, biological spectrum,ecological succession (Hydrosere , xerosere).
4. PRODUCTION ECOLOGY:- Concepts of productivity, GPP,NPP,CR (Community Respiration) and Secondary production,P/R ratio and ecosystems.

Disaster Management: Floods, Earth quake , Cyclone and Land slide

BIODIVERSITY

UNIT-III (10Hrs)

5. BIODIVERSITY; Concepts,convention on biodiversity-Earth Summit. Types of Biodiversity.
6. BIODIVERSITY:- Levels , threats and value of biodiversity.

UNIT-IV- (10hrs)

7. HOT SPOTS OF INDIA:- Endemism, North Eastern Himalayas , Western Ghats.
8. PRINCIPLES OF CONSERVATION:- IUCN threat- categories,RED data book- threatened & endangered Plants of India. Role of organizations in the conservation of biodiversity-IUCN,UNEP,WWF& NBPGR
9. Solid waste management -causes and control measures

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GOVERNMENT DEGREE COLLEGE FOR WOMEN BEGUMPET –HYDERABAD.
(AUTONOMOUS) CBCS
DEPARTMENT OF BOTANY
Syllabus-Total Hrs of Teaching 60hrs@ 4hrs/week
B.sc. III YEAR -SEMESTER-VI -PAPER-V II APPLIED(core)
(PLANT PHYSIOLOGY)

UNIT-I- (16 Hrs.)

1. WATER RELATIONS:- Importance of water to plant life, physical properties Of water, diffusion, imbibitions, Osmosis; water, osmotic,& pressure potentials;absorption,transport of water, Ascent of sap; transpiration, Stomata structure and movements.

2.MINERAL NUTRITION; Essential macro and micro mineral nutrients and their role;symptoms of mineral Deficiency; absorption of mineral ions; passive and active processes.

UNIT-II- (16Hrs)

3. ENZYMES:- Nomenclature, characteristics, mechanism and regulation of enzyme action. Enzyme kinetics factors regulating enzyme action.

4. PHOTOSYNTHESIS:- Photosynthetic pigments, absorption and action spectra; red drop and Emerson Enhancement effect; concept of two photo systems; mechanism of photosynthetic electron transport and evolution of oxygen; photo phosphorylation; carbon assimilation pathways:C3,C4 and CAM Photorespiration.

UNIT-III (12Hrs)

5.TRANSLOCATION OF ORGANIC SUBSTANCES:-Mechanism of phloem transport;source –Sink Relationships

6.RESPRIATION:- Aerobic and Anaerobic; Glycol sis, Krebs' cycle; Electron transport system Mechanism of Oxidative phosphorylation, Pentose phosphate pathway.

UNIT-IV- (16Hrs)

7.NITROGEN METABOLISM:-Biological Nitrogen fixation, Nitrate reduction, Ammonia assimilation.

8.Amino Acids and Protein Synthesis

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7/4/17

D. Manjatha

GOVERNMENT DEGREE COLLEGE FOR WOMEN BEGUMPET –HYDERABAD.

(AUTONOMOUS) CBCS

DEPARTMENT OF BOTANY

Syllabus-Total Hrs of Teaching 60@4 hrs/week

B.sc. III YEAR -SEMESTER-VI -PAPER-V III Applied Elective-I

(TISSUE CULTURE & BIOTCHNOLOGY, GROWTH& DEVELOPMENT AND SEED TECHNOLOGY)

TISSUE CULTURE: (20Hrs)

UNIT- I

1.-Introduction, sterilization procedures, culture media-composition and preparation; explants.

2. Callus culture; cell and protoplast culture, somatic hybrids and cybrids

. Application of tissue culture: production of pathogen free plants and somaclonal variants, production of Stress resistance plants, secondary metabolites and synthetic seeds.

BIOTECHNOLOGY:

UNI T-II (12 Hrs)

3. Introduction, history and scope.

4. DNA Recombinant Technology: vectors and gene cloning and transgenic plants.

GROWTH AND DEVELOPMENT:-

UNIT-III- (12Hrs)

5. Definition, phases and kinetics of growth

6. Physiological effects of Phyto hormones-Auxins,Gibberlins, Cytokinins,ABA,Ethylene and Brassinosteroids.

SEED Techno;ogy:-

UNIT-IV. (16Hrs)

7. Structure and types. Seed dormancy; causes and methods of breaking of dormancy.

8. SEED STORAGE:- Seed banks,factors affecting seed viability and genetic erosion.

.Seed production technology Seed testing and certification.

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Photosynthesis—photochemical reactions, photophosphorylation and carbon fixation pathways; C_3, C_4 and CAM pathways; Mechanism of pholem transport, Respiration (anerobic and aerobic, including fermentation)—electron transport chain and oxidative phosphorylation; Photorespiration; Chemiosmotic theory and ATP synthesis; Lipid metabolism; Nitrogen fixation and nitrogen metabolism. Enzymes, coenzymes; Energy transfer and energy conservation. Importance of secondary metabolites. Pigments as photoreceptors (plastidial pigments and phytochrome). Plant movements; Photoperiodism and flowering, vernalization, senescence; Growth substances—their chemical nature, role and applications in agri-horticulture; growth indices, growth movements. Stress physiology (heat, water, salinity, metal); Fruit and seed physiology. Dormancy, storage and germination of seed. Fruit ripening—its molecular basis and manipulation.

5. **Ecology and Plant Geography :**

Concept of ecosystem; Ecological factors. Concepts and dynamics of community; Plant succession. Concepts of biosphere; Ecosystems; Conservation; Pollution and its control (including phytoreme-diation); Plant indicators; Environment (Protection) Act.

Forest types of India—'Ecological and ecomomic importance of forests, afforestation, deforestation and social forestry; Endangered plants, endemism IUCN categories, Red Data Books; Biodiversity and its conservation; Protected Area Network; Convention of Biological Diversity, Farmers' Rights; and Intellectual Property Rights; Concept of Sustainable Development; Biogeochemical cycles. Global warming and climatic change; Invasive species; Environmetal Impact Assessment; Phytogeographical regions of India.

CHEMISTRY

PAPER-I

1. **Atomic Structure :**

Heisenberg's uncertainty principle Schrodinger wave equation (time independent); Interpretation of wave function, particle in one- dimensional box, quantum numbers, hydrogen atom wave functions; Shapes of s, p and d orbitals.

2. **Chemical bonding :**

Ionic bond, characteristics of ionic compounds, lattice energy, Born-Haber cycle; covalent bond and its general characteristics, polarities of bonds in molecules and their dipole moments; Valence bond theory, concept of resonance and resonance energy; Molecular orbital theory (LCAO method); bonding H_2 +, H2 He_2 + to Ne_2, NO, CO, HF, CN^-, Comparison of valence bond and molecular orbital theories, bond order, bond strength and bond length.

3. **Solid State :**

Crystal systems; Designation of crystal faces, lattice structures and unit cell; Bragg's law; X-ray diffraction by crystals; Close packing, radius ratio rules, calculation of some limiting radius ratio values; Structures of NaCl, ZnS, CsCl, CaF_2; Stoichiometric and

nonstoichiometric defects, impurity defects, semi-conductors.

4. **The Gaseous State and Transport Phenomenon :**

   Equation of state for real gases, intermolecular interactions, and critical phenomena and liquefaction of gases; Maxwell's distribution of speeds, intermolecular collisions, collisions on the wall and effusion; Thermal conductivity and viscosity of ideal gases.

5. **Liquid State :**

   Kelvin equation; Surface tension and surface enercy, wetting and contact angle, interfacial tension and capillary action.

6. **Thermodynamics :**

   Work, heat and internal energy; first law of thermodynamics.

   Second law of thermodynamics; entropy as a state function, entropy changes in various processes, entropy-reversibility and irreversibility, Free energy functions; Thermodynamic equation of state; Maxwell relations; Temperature, volume and pressure dependence of U, H, A, G, Cp and Cv, ⍰⍰and⍰⍰ ; J-T effect and inversion temperature; criteria for equilibrium, relation between equilibrium constant and thermodynamic quantities; Nernst heat theorem, introductory idea of third law of thermodynamics.

7. **Phase Equilibria and Solutions :**

   Clausius-Clapeyron equation; phase diagram for a pure substance; phase equilibria in binary systems, partially miscible liquids—upper and lower critical solution temperatures; partial molar quantities, their significance and determination; excess thermodynamic functions and their determination.

8. **Electrochemistry :**

   Debye-Huckel theory of strong electrolytes and Debye-Huckel limiting Law for various equilibrium and transport properties.

   Galvanic cells, concentration cells; electrochemical series, measurement of e.m.f. of cells and its applications fuel cells and batteries.

   Processes at electrodes; double layer at the interface; rate of charge transfer, current density; overpotential; electroanalytical techniques : amperometry, ion selective electrodes and their use.

9. **Chemical Kinetics:**

   Differential and integral rate equations for zeroth, first, second and fractional order reactions; Rate equations involving reverse, parallel, consecutive and chain reactions; Branching chain and explosions; effect of temperature and pressure on rate constant. Study of fast reactions by stop-flow and relaxation methods. Collisions and transition state theories.

10. **Photochemistry:**

    Absorption of light; decay of excited state by different routes; photochemical reactions between hydrogen and halogens and their quantum yields.

11. **Surface Phenomena and Catalysis:**

(iv) **Elimination reactions** :—E1, E2 and E1cb mechanisms; orientation in E2 reactions—Saytzeff and Hoffmann; pyrolytic *syn* elimination—acetate pyrolysis, Chugaev and Cope eliminations.

(v) **Addition reactions** :—Electrophilic addition to C=C and C≡C; nucleophilic addition to C=O, C≡N, conjugated olefins and carbonyls.

(vi) **Reactions and Rearrangements** :—(a) Pinacol-pinacolone, Hoffmann, Beckmann, Baeyer-Villiger, Favorskii, Fries, Claisen, Cope, Stevens and Wagner—Meerwein rearrangements.

(b) Aldol condensation, Claisen condensation, Dieckmann, Perkin, Knoevenagel, Witting, Clemmensen, Wolff-Kishner, Cannizzaro and von Richter reactions; Stobbe, benzoin and acyloin condensations; Fischer indole synthesis, Skraup synthesis, Bischler-Napieralski, Sandmeyer, Reimer-Tiemann and Reformatsky reactions.

3. **Pericyclic reactions** :—Classification and examples; Woodward-Hoffmann rules—electrocyclic reactions, cycloaddition reactions [2+2 and 4+2] and sigmatropic shifts [1, 3; 3, 3 and 1, 5], FMO approach.

4. (i) **Preparation and Properties of Polymers:** Organic polymerspolyethylene, polystyrene, polyvinyl chloride, teflon, nylon, terylene, synthetic and natural rubber.

(ii) Biopolymers: Structure of proteins, DNA and RNA.

5. **Synthetic Uses of Reagents:**

OsO_4, HIO_4, CrO_3, $Pb(OAc)_4$, SeO_2, NBS, B_2H_6, Na-Liquid NH_3, $LiAlH_4$, $NaBH_4$, n-BuLi, MCPBA.

6. **Photochemistry** :—Photochemical reactions of simple organic compounds, excited and ground states, singlet and triplet states, Norrish-Type I and Type II reactions.

7. **Spectroscopy:**

Principle and applications in structure elucidation :

(i) **Rotational**—Diatomic molecules; isotopic substitution and rotational constants.

(ii) **Vibrational**—Diatomic molecules, linear triatomic molecules, specific frequencies of functional groups in polyatomic molecules.

(iii) **Electronic**—Singlet and triplet states. $n\pi^*$ and $\pi\pi^*$ transitions; application to conjugated double bonds and conjugated carbonyls Woodward-Fieser rules; Charge transfer spectra.

(iv) **Nuclear Magnetic Resonance (^{1}HNMR):** Basic principle; chemical shift and spin-spin interaction and coupling constants.

(v) **Mass Spectrometry** :—Parent peak, base peak, metastable peak, McLafferty rearrangement.

CIVIL ENGINEERING

PAPER-I

Adsorption from gases and solutions on solid adsorbents; Langmuir and B.E.T. adsorption isotherms; determination of surface area, characteristics and mechanism of reaction on heterogeneous catalysts.

12. **Bio-inorganic Chemistry:**

Metal ions in biological systems and their role in ion-transport across the membranes (molecular mechanism), oxygen-uptake proteins, cytochromes and ferrodoxins.

13. **Coordination Chemistry :**

(i) Bonding in transition of metal complexes. Valence bond theory, crystal field theory and its modifications; applications of theories in the explanation of magnetism and elctronic spectra of metal complexes.

(ii) Isomerism in coordination compounds; IUPAC nomenclature of coordination compounds; stereochemistry of complexes with 4 and 6 coordination numbers; chelate effect and polynuclear complexes; trans effect and its theories; kinetics of substitution reactions in square-planar complexes; thermodynamic and kinetic stability of complexes.

(iii) EAN rule, Synthesis structure and reactivity of metal carbonyls; carboxylate anions, carbonyl hydrides and metal nitrosyl compounds.

(iv) Complexes with aromatic systems, synthesis, structure and bonding in metal olefin complexes, alkyne complexes and cyclopentadienyl complexes; coordinative unsaturation, oxidative addition reactions, insertion reactions, fluxional molecules and their characterization; Compounds with metal—metal bonds and metal atom clusters.

14. **Main Group Chemistry:**

Boranes, borazines, phosphazenes and cyclic phosphazene, silicates and silicones, Interhalogen compounds; Sulphur—nitrogen compounds, noble gas compounds.

15. **General Chemistry of 'f' Block Element:**

Lanthanides and actinides: separation, oxidation states, magnetic and spectral properties; lanthanide contraction.

PAPER-II

1. **Delocalised Covalent Bonding :**

Aromaticity, anti-aromaticity; annulenes, azulenes, tropolones, fulvenes, sydnones.

2. (i) **Reaction mechanisms** : General methods (both kinetic and non-kinetic) of study of mechanisms or organic reactions : isotopies, mathod cross-over experiment, intermediate trapping, stereochemistry; energy of activation; thermodynamic control and kinetic control of reactions.

(ii) **Reactive intermediates** : Generation, geometry, stability and reactions of carboniumions and carbanions, free radicals, carbenes, benzynes and nitrenes.

(iii) **Substitution reactions** :—S_N 1, S_N 2, and S_N i, mechanisms ; neighbouring group participation; electrophilic and nucleophilic reactions of aromatic compounds including heterocyclic compounds—pyrrole, furan, thiophene and indole.

I Semester

B.Sc. I Year | Chemistry-I | 60h (4h/w)

Academic Year 2017-18
Inorganic, Organic, Physical & General

Chapters	Unit –I Inorganic chemistry	15h	Credits
I	s-block elements	2hrs	03
II	p-block elements (up to group -15)	7hrs	
III	General Principles of Inorganic quantitative analysis	6hrs	
	Unit –II : Organic chemistry	**15hrs**	
I	Structural theory in organic chemistry	6hrs	
II	Acyclic Hydrocarbons-	06hrs	
	Alicyclic Hydrocarbons	03hrs	
	Unit –III : Physical chemistry	**15hrs**	
I	Atomic structure and elementary quantum mechanics	6hrs	
II	Gaseous state	5hrs	
III	Liquid State	4hrs	
	Unit –IV: General chemistry	**15h**	
I	Chemical bonding	11hrs	
II	Evaluation of analytical.data	04 hrs	
	Lab course: Preparation of Inorganic compounds, Semi micro analysis of Anions	45hrs	01

15h (1 hr/week)

Unit-I (Inorganic Chemistry) **2 h**

S1-I-1. s-block elements:
General Characteristics of groups I and II elements, Diagonal relationship between Li and Mg, Be and Al

7 h

S1-I-2. p-block elements 1:
Group–13:Synthesis and structure of diborane and higher Boranes (B_4H_{10} and B_5H_9), Boron nitrogen compounds ($B_3N_3H_6$ and BN), Lewis acid nature of BX_3
Group – 14: Carbides-Classification – ionic, covalent, interstitial – synthesis.Structures and reactivity. Industrial application. Silicones – Preapartion – a) direct silicon process b) use of Grignard reagent c) aromatic silylation. Classification – straight chain, cyclic and cross-linked.
Group – 15: Nitrides – Classification – ionic, covalent and interstitial. Reactivity – hydrolysis.Preparation and reactions of hydrazine, hydroxyl amine, phosphazenes.

S1-I-3. General Principles of Inorganic qualitative analysis **6 h**

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions-CO_3^{-2}, Cl^-, Br^-, SO_4^{-}, PO_4^{-}, BO_3^{-} CH_3COO^-, NO_3^-

Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+}, Ag^+, Pb^+) with flow chart and chemical equations. Principle involved in separation of group II & IV cations.

General discussion for the separation and identification of group II (Hg^{2+}, Pb^{2+}, Bi^{3+}, Cd^{2+}, Sb^{2+}), III (Al^{3+}, Fe^{3+}), IV ((Mn^{2+}, Zn^{2+}) individual cations with flow chart and chemical equations. Application of concept of hydrolysis in group V cation analysis. General discussion for the separation and identification of group V individual cations (Ba^{2+}, Sr^{2+}, Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+}, NH_4^+).

Unit - II (Organic Chemistry) **15h(1 hr/week)**

S1-O-1:Structural Theory in Organic Chemistry **6 h**

Bond polarization: Factors influencing the polarization of covalent bonds, electro negativity – inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance - Mesomeric effect, application to (a) acidity of phenol. (b) acidity of carboxylic acids and basicity of anilines. Stability of carbo cations, carbanions and free radicals. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes.

Types of organic reactions: Addition reactions- electrophilic, nucleophilic and free radical. Substitution reactions – electrophilic, nucleophilic and free radical. Elimination and Rearrangement reactions– Examples.

S1-O-2: Acyclic Hydrocarbons **6 h**

Alkanes– Methods of preparation: Corey-House reaction, Wurtz reaction, from Grignard reagent, Kolbe synthesis. Chemical reactivity - inert nature, free radical substitution, Halogenation example- reactivity, selectivity and orientation.

Alkenes - Preparation of alkenes (with mechanism) (a) by dehydration of alcohols (b) dehydrohalogenation of alkyl halides (c) by dehalogenation of 1,2 dihalides, Zaitsev's rule. Properties: Addition of Hydrogen – heat of hydrogenation and stability of alkenes. trans-addition of halogen and its mechanism. Addition of HX, Markonikov's rule, addition of H_2O, HOX, H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti – Markonikov's addition). Oxidation (cis – additions) – hydroxylation by $KMnO_4$, OsO_4, trans addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes – Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Acidity of terminal alkynes (formation of metal acetylides) preparation of higher alkynes, Chemical reactivity – electrophilic addition of X_2, HX, H_2O (tautomerism), Oxidation (formation of enediol, 1,2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation)

S1-O-3: Alicyclic Hydrocarbons 3 h

Nomenclature, preapartion by Freunds method, Dieckmann, heating dicarboxylic metal salts. Properties – reactivity of cyclo propane and cyclo butane by comparing with alkanes. Stability of cycloalkanes – Baeyer strain theory, Sachse and Mohr predictions and Pitzer strain theory. Conformational structures of cyclopentane, cyclohexane.

Unit-III (Physical Chemistry) **15 h (1 hr/week)**

S1-P-1: Atomic structure and elementary quantum mechanics 6 h

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect,Limitations of classical mechanics, Compton effect, De Broglie's hypothesis. Heisenberg's uncertainty principle, Schrodinger's wave equation and its importance. Physical interpretation of the wave function, significance of Ψ and Ψ_2, a particle in a box, energy levels, wave functions and probability densities. Schrodinger wave equation for H-atom. Separation of variables, radial and angular functions (only equation), hydrogen like wave functions, quantum numbers and their importance.

S1-P-2: Gaseous State 5 h

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO_2. The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State 4 h

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only). Liquid crystals, the mesomorphic state: Classification of liquid crystals in to Smectic and Nematic, differences between liquid crystal and solid / liquid. Application of liquid crystals as LCD devices.

Unit – IV (General Chemistry) **15 h (1 hr/week)**

S1-G-1 Chemical Bonding 11 h

Ionic solids- lattice and solvation energy, solubility of ionic solids, Fajan's rule, polarity and polarizability of ions, covalent nature of ionic bond, covalent bond - Common hybridization and shapes of molecules.

Molecular orbital theory: Shapes and sign convention of atomic orbitals. Modes of overlapping. Concept of σ and π bonds. Criteria for orbital overlap. LCAO concept. Types of molecular orbitals- bonding, antibonding and non bonding. MOED of homonuclear diatomics - H_2, N_2, O_2,O_2^- ,O_2^{2-},F_2 (unhybridized diagrams only) and heteronuclear diatomics CO, CN- NO, NO^+ and HF. Bond order, stability and magnetic properties.

S1-G-2 Evaluation of analytical data 4 h

Significant figures, accuracy and precision. Errors-classification of errors- determinate and indeterminate errors, absolute and relative errors, propagation of errors in

II Semester

B.Sc. I Year | Chemistry-II | 60h (4h/w)

Academic Year 2017-18
Inorganic, Organic, Physical & General

Chapters	Unit –I Inorganic chemistry	15h	Credits
I	p-block Elements	7hrs	03
II	Chemistry of Zero group elements	2hrs	
III	Chemistry of d-block elements	6hrs	
	Unit –II : Organic chemistry	**15hrs**	
I	Aromatic Hydrocarbons	7hrs	
II	Arenes and polynuclear Aromatic Hydrocarbons	3hrs	
III	Halogen compounds	5hrs	
	Unit –III : Physical chemistry	**15hrs**	
I	Solutions	5hrs	
II	Dilute Solutions & Colligative Properties	5hrs	
III	Solid state Chemistry	5hrs	
	Unit –IV: General chemistry	**15h**	
I	Theory of Quantitative Analysis	5hrs	
II	Theories of bonding in metals	5hrs	
III	Material Science	5hrs	
	Lab course: Preparation of Inorganic compounds, Semi micro analysis of Anions	45hrs	01

Unit-I (Inorganic Chemistry) **15 h (1 hr/week)**

S2-I-1 p-block Elements -II **7 h**

Oxides: Types of oxides (a) Normal- acidic, basic amphoteric and neutral (b) Mixed(c) sub oxide d) peroxide e) superoxide. Structure of oxides of C, N, P, S and Cl - reactivity, thermal stability, hydrolysis.

Oxy acids: Structure and acidic nature of oxyacids of B, C, N, P, S and Cl. Redox properties of oxyacids of Nitrogen: HNO_2 (reaction with $FeSO_4$, $KMnO_4$, $K_2Cr_2O_7$), HNO_3 (reaction with H_2S, Cu), HNO_4 (reaction with KBr, Aniline), $H_2N_2O_2$ (reaction with $KMnO_4$). Redox properties of oxyacids of Potasium: H_3PO_2 (reaction with $HgCl_2$), H_3PO_3 (reaction with $AgNO_3$, $CuSO_4$).

Redox properties of oxyacids of Sulphur: H_2SO_3 (reaction with $KMnO_4$, $K_2Cr_2O_7$), H_2SO_4 (reaction with Zn, Fe, Cu), $H_2S_2O_3$ (reaction with Cu, Au), H_2SO_5 (reaction with KI, $FeSO_4$), $H_2S_2O_8$ (reaction with $FeSO_4$, KI)

Interhalogens- classification- general preparation- structures of AB, AB_3, AB_5 and AB_7 type and reactivity. Poly halides- definition and structure of ICl_2^-, ICl_4^- and I_3^- Comparison of Pseudohalogens with halogens.

S2-I-2 Chemistry of Zero group elements **2 h**

General preparation, structure, bonding and reactivity of Xenon compounds – Oxides, Halides and Oxy-halides. Clatherate compounds and Anomalous behavior of He (II)

S2-I-3Chemistry of d-block elements **6 h**

Characteristics of d-block elements with special reference to electronic configuration variable valence, ability to form complexes, magnetic properties &catalytic properties. Stability of various oxidation states and SRP Comparative treatment of second and third transition series with their 3d analogues. Study of Ti, Cr and Cu traids. Titanium triad – electronic configuration and reactivity of +3 and +4 states – oxides and halides. Chromium triad – reactivity of +3 and +6 states. Copper triad – reactivity of +1, +2 and +3 states.

Unit – II (Organic chemistry) **15 h (1 hr/week)**

S2-O-1: Aromatic Hydrocarbons **7h**

Concept of aromaticity –definition, Huckel's rule – application to Benzenoids and Non – Benzenoids (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation). Preapartions: From acetylene, phenols, benzene carboxylic acids and sulphonic acids Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation,and halogenation, Friedel Craft's alkylation(polyalkylation) and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - carboxy, nitro, nitrile, carbonyl and sulphonic acid& halo groups.

S2-O-2: Arenes and Polynuclear Aromatic Hydrocarbons **3 h**

Preparation of alkyl benzenes by Friedel Craft's alkylation, Friedel Craft's acylation followed by reduction, Wurtz-Fittig reaction. Chemical reactivity: Ring substitution reactions,side chain substitution reactions and oxidation.
Polynuclear hydrocarbons – Structure of naphthalene and anthracene (Molecular Orbital diagram and resonance energy) Reactivity towards electrophilic substitution. Nitration and sulphonation as examples.

S2-O-3: Halogen compounds **5 hrs**

Nomenclature and classification: alkyl (primary, secondary, tertiary), aryl, aralkyl, allyl, vinyl, benzyl. Chemical reactivity - reduction, formation of RMgX, Nucleophilic substitution reactions – classification into S_{N1} and S_{N2}. Mechanism and energy profile diagrams of S_{N1} and S_{N2} reactions. Stereochemistry of S_{N2} (Walden Inversion) 2-bromobutane, S_{N1} (Racemisation) 1-bromo-1-phenylpropane explanation of both by taking the example of optically active alkyl halide. Structure and reactivity – Ease hydrolysis - comparison of alkyl, vinyl, allyl, aryl, and benzyl halides.

Unit – III (Physical Chemistry) **15 h (1 hr/week)**

S2-P-1: Solutions **5 h**

Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes HCl-H_2O and C_2H_5OH - H_2O systems. Fractional distillation,.

Partially miscible liquids- Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems. Lower upper consolute temperatures. Effect of impurity on consolute temperature.Immiscible liquids andsteam distillation. Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law with solvent extraction.

S2-P-2: Dilute Solutions & Colligative Properties **5 h**

Dilute Solutions, Colligative Properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis - laws of osmotic pressure, its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, Van't hoff factor, degree of dissociation and assocoation of solutes.

S2-P-3: Solid state Chemistry **5 h**

Laws of Crystallography – (i) Law of Constancy of interfacial angles (ii) Law of Symmetry, Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). Xray diffraction by crystals; Derivation of Bragg's equation, Determination of structure of NaCl, KCl & CsCl (Bragg's method and Powder method).

Unit – IV (General Chemistry) **15 h (1 hr/week)**

S2-G-1: Theory of Quantitative Analysis **5 hours**

Volumetric Analysis: Introduction, standard solutions, indicators, end point, titration curves, Types of titrations: i)neutralization titration- principle, theory of acid base indicators, titration curves and selection of indicators- strong acid - strong base, strong acid –weak base, weak acid- strong base and weak acid –weak base.
Gravimetric analysis- Introduction, nucleation, precipitation, growth of precipitate, filtration and washing, drying and incineration of precipitate, coprecipitation and post precipitation. Determination of Ni^{2+}

S3-G-2: Theories of bonding in metals: **5 h**

Valence bond theory, Explanation of metallic properties and its limitations, Free electron theory, thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors n-type and p-type, extrinsic & intrinsic semiconductors, and insulators.

S2-G-3: Material Science **5 h**

Classification of materials- classification as metals, ceramics, organic polymers, composites, biological materials etc. The property of super conductivity of materials. Super conducting materials- elements, alloys and compounds. Properties of super conductors- zero resistivity, Meisener effect and thermal properties. Compositesmeaning of composites, advanced composites, classification –particle rein forced fiber reinforced and structural composites general characters of composite materials-Particlereinforced composites – large particle and dispersion- strengthened composite. Fiber reinforced composites (continuous and discontinuous fiber composites).

V Semester

B.Sc. III Year | Chemistry-V | 45h (3h/w)

Academic Year 2017-18
Inorganic, Organic, Physical

Chapters	Unit –I Inorganic chemistry	15h	Credits
I	Coordination chemistry	10hrs	
II	Spectral and magnetic properties of metal complexes	05hrs	
	Unit –II : Organic chemistry	**15hrs**	
I	Nitrogen compounds	09hrs	03
II	Carbohydrates	06hrs	
	Unit –III : Physical chemistry	**15hrs**	
I	Chemical kinetics	09hrs	
II	Photochemistry	06hrs	
	Lab course: preparation of organic compounds and TLC, Column chromatography	45hrs	01

Unit – I (Inorganic Chemistry-III) 15 hrs (1 h/w)

1. Coordination Chemistry **10h**

IUPAC nomenclature, bonding theories – review of Werner's theory and Sedgwick's concept of coordination, Valence bond theory, geometries of coordination numbers 4-tetrahedral and square planar and 6-octahedral and its limitations, crystal filed theory, splitting of d-orbitals in octahedral, tetrahedral and square-planar complexes CFSE-calculations in presence of strong ligands and weak ligands – low spin and high spin complexes – factors affecting crystal field splitting energy, merits and demerits of crystal-field theory. Isomerism in coordination compounds – structural isomerism and stereo isomerism, stereochemistry of complexes with 4 and 6 coordination numbers.

2. Spectral and magnetic properties of metal complexes **5h**

Electronic absorption spectrum of $[Ti(H_2O)_6]^{3+}$ ion. Types of magnetic behavior, spin-only formula, calculation of magnetic moments, experimental determination of magnetic susceptibility – Gouy method.

UNIT – II (Organic Chemistry – III) 15 hrs (1h/w)

1. Nitrogen compounds **9 h**

Nitro hydrocarbons: Nomenclature and classification – nitro hydrocarbons – structure. Tautomerism of nitroalkanes leading to aci and keto form. Preparation of Nitroalkanes. Reactivity – halogenation, reaction with HONO (Nitrous acid), Nef reaction and Mannich

reaction leading to Michael addition and reduction. Amines (Aliphatic and Aromatic): Nomenclature, Classification into 1o, 2o, 3o Amines and Quarternary ammonium compounds. Preparative methods -1. Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromamide reaction (mechanism).

4. Reduction of Amides and Schmidt reaction. Physical properties and basic character – Comparative basic strength of Ammonia, methyl amine, dimethyl amine, trimethyl amine and aniline – comparative basic strength of aniline, N-methylaniline and N,N-dimethyl aniline (in aqueous and non-aqueous medium), steric effects and substituent effects. Use of amine salts as phase transfer catalysts. Chemical properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation e) Reaction with Nitrous acid of 1o, 2o, 3o (Aliphatic and aromatic amines). Electrophilic substitutions of Aromatic amines – Bromination and Nitration. oxidation of aryl and 3o Amines. Diazotization Cyanides and isocyanides: Nomenclature (aliphatic and aromatic) structure. Preparation of cyanides from a) Alkyl halides b) from amides c) from aldoximes. Preparation of isocyanides from Alkyl halides and Amines. Properties of cyanides and isocyanides, a) hydrolysis b) addition of Grignard reagent iii) reduction iv) oxidation.

II. Carbohydrates **6 h**

Monosaccharides: All discussion to be confined to (+) glucose as an example of aldo hexoses and (-) fructose as example of ketohexoses. Chemical properties and structureal elucidation: Evidences for straight chain pentahydroxy aldehyde structure (Acetylation, reduction to n-hexane, cyanohydrin formation, reduction of Tollen's and Fehling's reagents and oxidation to gluconic and saccharic acid). Number of optically active isomers possible for the structure, configuration of glucose based on D-glyceraldehyde as primary standard (no proof for configuration is required). Evidence for cyclic structure of glucose (some negative aldehydes tests and mutarotation). Cyclic structure of glucose. Decomposition of cyclic structure (Pyranose structure, anomeric Carbon and anomers). Proof for the ring size (methylation, hydrolysis and oxidation reactions). Different ways of writing pyranose structure (Haworth formula and chair conformationa formula). Structure of fructose: Evidence of 2 – ketohexose structure (formation of penta acetate, formation of cyanohydrin its hydrolysis and reduction by HI to give 2-Carboxy-nhexane). Same osazone formation from glucose and fructose, Hydrogen bonding in osazones, cyclic structure for fructose (Furanose structure and Haworth formula). Interconversion of Monosaccharides: Aldopentose to aldo hexose – eg: Arabinose to DGlucose, D-Mannose (Kiliani - Fischer method). Epimers, Epimerisation – Lobry de bruyn van Ekenstein rearrangement. Aldohexose to Aldopentose eg: D-glucose to Darabinose by Ruff f degradation. Aldohexose (+) (glucose) to ketohexose (-) (Fructose) and Ketohexose (fructose) to aldohexose (Glucose)

Unit-III (physical chemistry-III) 15hrs (1 h / w)

1. Chemical kinetics **10 h**

Rate of reaction, factors influencing the rate of a reaction-concentration, temperature, pressure, solvent, light, catalyst. Experimental methods to determine the rate of reaction. Definition of order and molecularity. Derivation of rate constants for first, second, third and zero order reactions and examples. Derivation for time half change. Methods to determine the order of reactions. Kinetics of complex reactions (first order only):

opposing reactions, parallel reactions, consecutive reactions and chain reactions. Effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy. Theories of reaction rates- collision theory-derivation of rate constant for bimolecular reaction. The transition state theory (elementary treatment).

2. Photochemistry **5 h**

Difference between thermal and photochemical processes. Laws of photochemistry- Grothus-Draper's law and Stark-Einstein's law of photochemical equivalence. Quantum yield. Ferrioxalate actinometry. Photochemical hydrogen- chlorine, hydrogen-bromine reaction. Jablonski diagram depicting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing). Photosensitized reactions- energy transfer processes (simple example)

V Semester

B.Sc. III Year | Chemistry-VI | 45h (3h/w)

Academic Year 2017-18

Elective - A

Chapters	Unit –I Physico Chemical methods of analysis	15h	Credits
I	Separation techniques	12hrs	02
II	Spectrophotometry	04hrs	
	Unit –II : Drugs	**15hrs**	
I	Drugs	15hrs	
	Unit –III :	**15hrs**	
I	Macromalucules	10hrs	
II	Material science	05hrs	
	Lab Course: Kinetics, pH Metry, Colorimetric, Adsorption.	45hrs	01

Unit – I Physico Chemical methods of analysis **15 hrs (1 h / w)**

1. Separation techniques **11 hrs**

1. Solvent extraction: Principle and process, Nernst law, Batch extraction, continuous extraction and counter current extraction.

2. Chromatography: Classification of chromatography methods, adsorption phenomenon, Nature of adsorbents Rf values, factors effecting Rf values.a. Paper Chromatography: Principles, Rf values, experimental procedures,choice of paper and solvent systems, developments of chromatogram –ascending, descending and radial. Two dimensional chromatography,applications.

3. Thin layer Chromatography (TLC): Advantages. Principles, factorseffecting Rf values. Experimental procedures. Adsorbents and solvents.Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.c. Column Chromatography: Principles, experimental procedures,Stationary and mobile Phases, Separation technique. Applications

2. Spectrophotometry **4 hrs**

General features of absorption – spectroscopy, Beer-Lambert's law and its limitations, transmittance, Absorbance, and molar absorptivity. Single and double beam spectrophotometers. Application of Beer-Lambert law for quantitative analysis of

1. Chromium in $K_2Cr_2O_7$
2. Manganese in manganous sulphate
3. Iron (III) with thiocyanate.

Unit –II: Drugs 15 hrs (1 h / w)

1. Drugs **15 h**

1. Introduction: Drug, disease (definition), Historical evolution, Sources – Plant, Animal

synthetic, Biotechnology and human gene therapy 2. Terminology: Pharmacy, Pharmacology, Pharmacophore, Pharmacodynamics, Pharmacokinetics (ADME, Receptors – brief treatment) Metabolites and Anti metabolites.
3. Nomenclature: Chemical name, Generic name and trade names with examples
4. Classification: Classification based on structures and therapeutic activity with one example each.
5. Synthesis: Synthesis and therapeutic activity of the following drugs., L-Dopa, Chloroquin, Omeprazole, Albuterol and ciprofloxacin,paracetamol,aspirin,sulphonilamide.
6. Drug Development: Pencillin, Separation and isolation, structures of different pencillins

Unit-III: (Macromolecules, materials Science) 15 hrs (1 h / w)

1. Macromolecules **11h**

Classification of polymers, chemistry of polymerization, chain polymerization, step Polymerization, coordination polymerization – tacticity. Molecular weight of polymers number average and weight average molecular weight, degree of polymerization,determination of molecular weight of polymers by viscometry, Osmometry and light scattering methods. Kinetics of free radical polymerization, derivation of rate law. Preparation and industrial application of polyethylene, PVC, Teflon, polyacrylonitrile, terelene and Nylon66. Introduction to biodegradability.

2. Materials science **4h**

Superconductivity, characteristics of superconductors, Meissner effect, types of superconductors and applications.

B.SC. IIIyr
45hrs

Semester – V

Elective – B

Chemistry – VI
Credits - 02

FOOD CHEMISTRY AND TECHNOLOGY

UNIT I: Introduction (10 h)

1.1 Food: source, functions of food – food groups – food guide – basic five food groups, usage of the food guide – food in relation to health – objectives of cooking.

1.2 Water: Purification processes – Ion exchangers, reverse osmosis, activated charcoal treatment. Use of chlorination, ozone, and UV light disinfection. Specification of drinking water. Water borne diseases – microbiological examination. Sources and detection.

1.3 Milk: Composition and effectiveness as a diet. Fat content in milk, whole and skimmed. Effect of cooking and heat processing of milk – pasteurization. Preservation of milk. Deep freeze preservation, dairy products – cheese, butter, ghee and kova. Spray drying technique – milk powder, infant food preparation. Lactose intolerance Milk substitutes – vegetable milk. Toned milk.

UNIT 2: Foods and Food Additives: (16 h)

2.1 Food additives: Artificial sweeteners – saccharin, cyclomate, asparatame – food flavours– esters,aldehydes and heterocyclic compounds. Antioxidants. Food colours – changes incooking..Restricted use. Spurious colours. Emulsifying agents, preservatives – leavening agents.Baking powder –Yeast. Taste enhancers – MSG-vinegar

2.2 Modern food: Mushroom cultivation and types, spirulina composition. Snack foods. Production of bread, bun and biscuits. Raw materials, methods and machinery required. Candy manufacturing. Caramellisation. Fast foods. Instant foods. Dehydrated foods.Oleoresin of spices. Condiments.

2.3 Beverages: Soft drinks, soda, fruit juices and alcoholic beverages (Types and content of alcohol).Examples, Carbonation. Addiction to alcohol. Cirrhosis of liver. Social problems.Composition of soft drinks.Excessive use leading to urinary bladder stones. Preservation of tetrapak. Nitrogen preservation and packing of fruit juices. Coconut water.

UNIT 3: Nutrition and Balanced Diet (7 h)

3.1 Nutrition – calorific value of food stuff – RQ of food (Respiratory quotient of food) – basal metabolic rate – factors influencing BMR, specific dynamic action (SDA) of food.

3.2 Thermogenic effect – energy requirements of individuals – diet and its components – the protein requirements – biological value of proteins, supplementary value of proteins. Diseases associated with protein malnutrition. Nutritional value of carbohydrates. – Fibers in the diet, dietary sugars – nutritional aspects of lipids.

UNIT 4: Food Adulteration And Hygiene (12h)

4.1 Adulterants: Common adulterants in different foods – milk and milk products, vegetable oils, and fats, spices and condiments, cereals, pulses, sweetening agents and beverages. Contamination with toxic chemicals – pesticides and insecticides. Principles involved in the analysis of detection and prevention of food adulteration.

4.2 Microbial growth: growth curve of bacteria. Effect of environmental factors on growth of microorganisms. pH, water activity, oxygen availability temperature – beneficial effect of micro organisms Food borne illness – bacteria, virus, moulds and parasites. (Any two illness each).

4.3 Food preservation and processing : Food deterioration, methods of preservation and processing.

4.4 Quality control: Specifications and standards: PFA, FPO, FDA, drug license, WHO standards, ISI specifications, packing and label requirements, essential commodities act, consumer protection act. AGMARK.

Reference Books

1. Swaminathan M. *Advanced Text Book on Food and Nutrition , volume I and II Printing and Publishing CO., Ltd., Bangalore.* 1993.
2. Swaminathan M. *Text Book on Food chemistry, Printing and Publishing CO., Ltd., Bangalore.* 1993.
3. Norman N. Potter , *Food science, CBS publishers and distributors, New Delhi.* 1994.
4. Lillian Hoagoland Meyer, *Food Chemistry, CBS publishers and distributors, New Delhi.* 1994.
5. Owen R Fennema, *Food Chemistry, Marcel Decker Inc., New York.* 1996.
6. Srilakshmi B., *Food Science, New age International Pvt. Ltd. Publishers, III ed.* 2003.
7. Siva Sankar B., *Food Processing and Preservation. Prentice – Hall of India Pvt. Ltd., New Delhi.* 2002.
8. Ramakrishnan S., Prasannam K.G and Rajan R –*Principles. Text book of medical biochemistry. Orient Longman* Ltd. III ed. 2001.
9. Shakuntala Manay N. and Shadaksharaswamy M. FOODS: Facts and Principles. *New age International Pvt. Ltd. Publishers, II ed.* 2002.

VI Semester

B.Sc. III Year | Chemistry-VII | 45h (3h/w)

Academic Year 2017-18

Inorganic, Organic, Physical

Chapters	Unit –I Inorganic chemistry	15h	CREDITS
I	Reactivity of metal complexes	04hrs	03
II	Stability of metal complexes	04hrs	
III	Hard and soft acids bases	04hrs	
IV	Bioinorganic chemistry	03hrs	
	Unit –II : Organic chemistry	**15hrs**	
I	Hetero cyclic compounds	05hrs	
II	Amino acids and proteins	05hrs	
III	Mass spectrometry	05hrs	
	Unit –III : Physical chemistry	**15hrs**	
I	Thermodynamics	15hrs	
	Lab course: Identification of organic compounds,Steamdistillation,Mixture separation, Green synthesis.	45hrs	01

Unit –I Inorganic chemistry

15hrs (1 h / w)

4h

1. Reactivity of metal complexes:

Labile and inert complexes, ligand substitution reactions in octahedral complexes – (SN1 and SN2)factors effecting the lability of complexes, substitution reactions in square planar complexes (SN2) – Trans effect and applications of Trans effect. Theories of trans effect 1. Electrostatic Polarisation theory 2.Pi-Bonding theory.

4h

2. Stability of metal complexes:

The rmodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.

4h

3. Hard and soft acids bases (HSAB):

Classification, Pearson's concept of hardness and softness, application of HSAB principles – Stability of compounds / complexes, predicting the feasibility of a reaction.

Metal carbonyls: Carbon monoxide as a ligand-Molecular orbital's of CO – Donar and Acceptor molecular orbital's of CO; Bonding modes of CO – Terminal and Bridging; Evidence for multiple bonding from Bond lengths and stretching frequencies.

4. Bioinorganic chemistry: 3h

Essential elements, biological significance of Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn and chloride (Cl-). Metallo porphyrins – hemoglobin, structure, Chlorophyll, structure and role in photosynthesis.

Unit –II: Organic chemistry 15hrs (1 h / w)

1. Heterocyclic Compounds 5 h

Introduction and definition: Simple 5 membered ring compounds with one hetero atomEx. Furan. Thiophene and pyrrole. Importance of ring system – presence in importantnatural products like hemoglobin and chlorophyll. Numbering the ring systems sperGreekletterandNumbers.Aromatic character – 6- electron system (four-electrons fromtwo double bonds and a pair of non-bonded electrons from the hetero atom). Tendency toundergo substitution reactions.Resonance structures: Indicating electron surplus carbons and electron deficient heteroatom. Explanation of feebly acidic character of pyrrole, electrophillic substitution at 2 or5 position, Halogenation, Nitration and Sulphonation under mild conditions. Reactivity offuran as 1,3-diene, Diels Alder reactions (one example). Sulphonation of thiophenepurification of Benzene obtained from coal tar). Preparation of furan, Pyrrole andthiophene from 1,4,- dicarbonyl compounds only, Paul-Knorr synthesis, structure ofpyridine, Basicity – Aromaticity – Comparison with pyrrole – one method of preparationand properties – Reactivity towards Nucleophilic substitution reaction – chichibabinreaction.

2. Amino acids and proteins 5 h

Introduction: Definition of Amino acids, classification of Amino acids into alpha, beta,and gama amino acids. Natural and essential amino acids – definition and examples,classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples – Glycine, Alanine, valine and leucene) by following methods: a) from halogenated carboxylic acid b) Malonic ester synthesis c) strecker's synthesis.Physical properties: Optical activity of naturally occurring amino acids: L-configuration,irrespective of sign rotation, Zwitterion structure – salt like character - solubility, melting points, amphoteric character , definition of isoelectric point.
Chemical properties: General reactions due to amino and carboxyl groups – lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides and proteins.

3. Mass Spectrometry: 5 h

Basic principles – Molecular ion / parent ion, fragment ions / daughter ions. Theory – formation of parent ions. Representation of mass spectrum. Identification of parent ion, (M+1), (M+2), base peaks (relative abundance 100%) Determination of molecular formula – Mass spectra of ethylbenzene, acetophenone, n-butyl amine and 1- proponal.

Unit-III (physical chemistry-III) 15hrs (1 h / w)

1. Thermodynamics 15 h

The first law of thermodynamics-statement, definition of internal energy and enthalpy. Heat capacities and their relationship. Joule's law-Joule-Thomson coefficient. Calculation of w, q, dU and dH for the expansion of perfect gas under isothermal and

adiabatic conditions for reversible processes. State function. Temperature dependence of enthalpy of formation-Kirchoff's equation. Second law of thermodynamics. Different Statements of the law. Carnot cycle and its
efficiency. Carnot theorem. Thermodynamic scale of temperature. Concept of entropy, entropy as a state function, entropy changes in cyclic, reversible, and irreversible processes and reversible phase change. Calculation of entropy changes with changes in V&T and P&T. Entropy of mixing inert perfect gases. Entropy changes in spontaneous and equilibrium processes. The Gibbs (G) and Hlmholtz (A) energies. A & G as criteria for thermodynamic equilibrium and spontaneity-advantage over entropy change. Gibbs equations and the Maxwell relation. Variation of G with P, V and T.

VI Semester

B.Sc. III Year | Chemistry-VIII | 45h (3h/w)

Academic Year 2017-18

Chapters	Unit –I Molecular spectroscopy	15h	Credits
I	Electronic spectroscopy	4hrs	03
II	Infrared spectroscopy	4hrs	
III	Raman spectroscopy	2hrs	
IV	Proton magnetic resonance spectroscopy	4hrs	
V	Spectral interpretation	1hrs	
	Unit –II : Drugs	**15hrs**	
I	HIV-AIDS	2hrs	
II	Formulations	3hrs	
III	Pesticides	5hrs	
IV	Green chemistry	5hrs	
	Unit –III :	**15hrs**	
I	Nanomaterials	3hrs	
II	catalysis	12hrs	
	Lab Course: Distribution, Conductometry, Potentiometry, Project work.	45hrs	01

15 hrs (1 h / w)

Unit –I Molecular spectroscopy

I. Electronic spectroscopy:

Interaction of electromagnetic radiation with molecules and types of molecular spectra. Potential energy curves for bonding and antibonding molecular orbitals. Energy levels of molecules (ó,ŏ, n) . Selection rules for electronic spectra. Types of electronic transitions in molecules, effect of conjugation. Concept of chromophore, Auxochrome, Bathochromic Shift, Hypsochromic shift.

II. Infra red spectroscopy

Energy levels of simple harmonic oscillator, molecular vibration spectrum, selection rules. Hooks law. Qualitative relation of force constant to bond energies. Anharmonic motion of real molecules and energy levels. Modes of vibrations in polyatomic molecules. Characteristic absorption bands of various functional groups. Finger print nature of infrared spectrum.

III. Raman spectroscopy

Concept of polarizavility ,Rayleigh scattering, Ramaneffect, selection rules, pure rotational and pure vibrational Raman spectra of diatomic molecules.

IV. Proton magnetic resonance spectroscopy (¹H-NMR)

Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, no of signals position of signals. Chemical shift, NMR splitting of signals – spin-spin coupling, coupling constants. Applications of NMR with suitable examples – ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone.

(v) Spectral interpretation

Interpretation of IR, UV-Visible, ¹H-NMR and mass spectral data of the following compounds
1. Phenyl acetylene 2. Acetophenone 3.Cinnamic Acid 4. para-nitro aniline

Unit –II: Drugs

15 hrs (1 h / w)

I. Drugs **4h**

1. HIV-AIDS: Immunity – CD-4 cells, CD-8 cells Retrovirus, replication in human body. Investigation available, prevention of AIDS. Drugs available – examples with structures: PIS: Indinavir (Crixivan), Nelfinavir (Viracept), NNRTIS: Efavirenz (Susrtiva),Nevirapine (Viramune) NRTIs: Abacavir (Ziagen), Lamivudine (Epivir, 3TC) Zidovudine (Retravir, AZT, ZDV)
2. Monographs of drugs: Eg Paracetamol, Sulpha methoxazole (Tablets)

II. Formulations **3 h**

1. Need of conversion of drugs into medicine. Additives and their role (brief account only)
2. Different types of formulations

III. Pesticides **3h**

1. Introduction to pesticides – types – Insecticides, Fungicides, Herbicides, Weedicides, Rodenticides plant growth regulators, Pheremones and Hormones. Brief discussion with examples, Structure and uses.
2. Synthesis and presnt status of the following.DDT, BHC, Malathion, Parathion, Endrin, Baygon, 2,4-D and Endo-sulphon

IV. Green Chemistry **5h**

Introduction: Definition of green Chemistry, need of green chemistry, basic principles of green chemistry

Green synthesis: Evalution of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic), Pericyclic reactions (no by-product). Selection of solvent:

i) Aqueous phase reactions ii) Reactions in ionic liquids iii) Solid supported synthesis iv) Solvent free reactions (solid phase reactions)

ii) Green catalysts: i) Phase transfer catalysts (PTC) ii) Biocatalysts

Microwave and Ultrasound assisted green synthesis:

1. Aldol condensation
2. Cannizzaro reaction
3. Diels-Alder reactions

4. Strecker synthesis
5. Willaimson synthesis
6. Dieckmann condensation

Unit –III: **15 hrs (1 h / w)**

I. Nanomaterials **3h**

Nanomaterials- synthetic techniques, bottom-up, sol-gel method, top-down, electro deposition method. Properties and applications of nano-materials. Composites-definition, general characteristics, particle reinforce and fiber reinforce composites and their applications.

II. Catalysis **12h**

Homogeneous and heterogeneous catalysis, comparison with examples. Kinetics of specific acid catalyzed reactions, inversion of cane sugar. Kinetics of specific base catalyzed reactions, base catalyzed conversion of acetone to diacetone alcohol. Acid and base catalyzed reactions-hydrolysis of esters, mutarotation of glucose. Catalytic activity at surfaces. Mechanisms of heterogeneous catalysis. Langmuir-Hinshelwood mechanism. Enzyme catalysis: Classification, characteristics of enzyme catalysis. Kinetics of enzyme catalyzed reactions-Michaelis Menton law, significance of Michaelis constant (K_m) and maximum velocity (V_{max}). Factors affecting enzyme catalysis- effect of temperature, pH, concentration and inhibitor. Catalytic efficiency. Mechanism of oxidation of ethanol by
alcohol dehydrogenase.

B.SC. IIIyr

Semester – VI

Credits - 03 Chemistry – VIII 45hrs

Elective – B

CH - 6651 : CHEMISTRY OF CONSUMER PRODUCTS

UNIT 1: SOAPS 7h

Saponification of oils and fats. Manufacture of soaps. Formulation of toilet soaps. Different ingredients used. Their functions. Medicated soaps. Herbal soaps. Mechanism of action of soap. Soft soaps. Shaving soaps and creams. ISI specifications. Testing procedures/limits.

UNIT 2: DETERGENTS 15h

a. Anionic detergents: Manufacture of LAB (linear alkyl benzene). Sulphonation of LAB – preparation of acid slurry. Different ingredients in the formulation of detergent powders and soaps. Liquid detergents. Foam boosters. AOS (alpha olefin sulphonates. b. cationic detergents: examples. Manufacture and applications. c. Non-ionic detergents: examples. Manufacture of ethylene oxide condensater. d. Mechanism of action of detergents. Comparison of soaps and detergents. Biodegradation – environmental effects. ISI specifications / limits.

UNIT 3: SHAMPOOS 8h

Manufacture of SLS and SLES. Ingredients. Functions. Different kinds of shampoos – anti-dandruff, anti-lice, herbal and baby shampoos. Hair dye. Manufacture of conditioners. Coco betaines or coco diethanolamides – ISI specifications. Testing procedures and limits.

UNIT 4: SKIN PREPARATIONS 10h

Face and skin powders. Ingredients, functions. Different types. Snows and face creams. Chemical ingredients used. Anti perspirants. Sun screen preparations. UV absorbers. Skin bleaching agents. Depilatories. Turmeric and Neem preparations. Vitamin oil. Nail polishes: nail polish preparation, nail polish removers. Article removers. Lipsticks, roughes, eyebrow pencils. Ingredients and functions – hazards. ISI specifications.

UNIT 5: 5h

Leading firms, brand names, choosing the right product. Packing regulations. Marketing. Licensing – drug license – legal aspects. GMP – ISO 9000/12000 – consumer education. Evaluation of the product – advertisements.

Reference books

1. Gobala Rao.S , Outlines of chemical technology, Affiliated East West press,1998
2. Kafaro, Wasteless chemical processing, Mir publishers, 1995.
3. Sawyer.W, Experimental cosmetics,Dover publishers, New york, 2000.

12. Estimation of phenol by Winkler's method.
13. Isolation of lactose from milk.Caffeine from tea leaves, Ginger oleoresin from Ginger.
14. Visit to the analytical laboratories / ISI / FPO / Government laboratories
15. Detection of alkaloids, terpenes, flavanoids, anthocyanins, proteins, amino acids and hydrocarbons in the natural product extracts. (a herbal extraction will be carried out.)

2017-18

Comm

Collection and disposal in rural and urban contexts, management of long-term ill-effects.

5. **Environmental pollution :**

Sustainable development. Radioactive wastes and disposal. Environmental impact assessment for thermal power plants, mines, river valley projects. Air pollution. Pollution control acts.

COMMERCE AND ACCOUNTANCY

PAPER-I

Accounting and Finance

Accounting, Taxation & Auditing

1. **Financing Accounting :**

Accounting as a financial information system; Impact of behavioural sciences. Accounting Standards e.g., Accounting for Depreciation, Inventories, Research and Development Costs, Long-term Construction Contracts, Revenue Recognition, Fixed Assets, Contingencies, Foreign Exchange Transactions, Investments and Government Grants, Cash Flow Statement, Earnings per Share.

Accounting for Share Capital Transactions including Bonus Shares, Right Shares.

Emplyees Stock Option and Buy-Back of Securities.

Preparation and Presentation of Company Final Accounts.

Amalgamations, Absorption and Reconstruction of Companies.

2. **Cost Accounting :**

Nature and functions of cost accounting. Installation of Cost Accounting System. Cost Concepts related to Income Measurement, Profit Planning, Cost Control and Decision Making.

Methods of Costing: Job Costing, Process Costing, Activity Based Costing.

Volume-cost-Profit Relationship as a tool of Profit Planning.

Incremental Analysis/Differential Costing as a Tool of Pricing Decisions, Product Decisions, Make or Buy Decisions, Shut-Down Decisions etc.

Techniques of Cost Control and Cost Reduction : Budgeting as a Tool of Planning and Control. Standard Costing and Variance Analysis.

Responsibility Accounting and Divisional Performance Measurement.

3. **Taxation :**

Income Tax: Definitions. Basis of charge; Incomes which do not form part of total income. Simple problems of Computation of Income (of individuals only) under various heads, i.e., Salaries, Income from House Property, Profits and Gains from Business or Profession, Capital Gains, Income from other sources, Income of other Persons included in Assessee's Total Income.

Set-off and Carry forward of Loss.

Deductions from Gross Total Income.

Salient Features/Provisions Related to VAT and Services Tax.

4. **Auditing :**

Company Audit: Audit related to Divisible Profits, Dividends, Special investigations, Tax audit.

Audit of Banking, Insurance, Non-Profit Organization and Charitable Societies/Trusts/Organizations.

Financial Management, Financial Institutions and Markets

1. **Financial Management :**

Finance Function : Nature, Scope and Objectives of Financial Management : Risk and Return Relationship.

Tools of Financial Analysis: Ratio Analysis, Funds-Flow and Cash-Flow Statement.

Capital Budgeting Decisions: Process, Procedures and Appraisal Methods. Risk and Uncertainty Anlysis and Methods.

Cost of Capital : Concept, Computation of Specific Costs and Weighted Average Cost of Capital. CAPM as aTool of Determining Cost of Equity Capital.

Financing Decisions: Theories of Capital Structure—Net Income (NI) Approach.

Net Operating Income (NOI) Approach, MM Approach and Traditional Approach. Designing of Capital structure: Types of Leverages (Operating, Financial and Combined), EBIT-EPS Analysis, and other Factors.

Dividend Decisions and Valuation of Firm : Walter's Model, MM Thesis, Gordan's Model Lintner's Model. Factors Affecting Dividend Policy.

Working Capital Management: Planning of Working Capital. Determinants of Working Capital. Components of Working Capital—Cash, Inventory and Receivables.

Corporate Restructuring with focus on Mergers and Acquisitions (Financial aspect only).

2. **Financial Markets and Institutions :**

Indian Financial System: An Overview

Money Markets: Participants, Structure and Instruments. Commercial Banks. Reforms in Banking Sector. Monetary and Credit Policy of RBI. RBI as a Regulator.

Capital Market : Primary and Secondary Market. Financial Market Instruments and Innovative Debt Instruments; SEBI as a Regulator.

Financial Services : Mutual Funds, Venture Capital, Credit Rating Agencies, Insurance and IRDA.

PAPER-II

Organisation Theory and Behaviours, Human Resource Management and Industrial Relations

Organisation Theory and Behaviour

1. **Organisation Theory :**

Nature and Concept of Organisation; External Environment of Organisation—Technological, Social, Political, Ecomomical and Legal; Organizational Goals Primary and Secondary Goals, Single and Multiple Goals; Management by Objectives.

Evolution of Organisation theory : Classical Neo-classical and system approach.

Modern Concepts of Organisation Theory : Organisational Design, Organisational

Structure and Organisational Culture.

Organisational Design—Basic Challenges; Differentiation and Intergration Process; Centralization and Decentralization Process; Standardization/Formalization and Mutual Adjustment. Coordinating Formal and Informal Organizations. Mechanistic and Organic Structures.

Designing Organizational structures—Authority and Control; Line and Staff Functions, Specialization and Coordination. Types of Organization Structure—Functional. Matrix Structure, Project Structure. Nature and Basis of Power, Sources of Power, Power Structure and Politics. Impact of Information Technology on Organizational Design and Structure.

Managing Organizational Culture.

2. **Organisation Behaviour :**

Meaning and Concept; Individual in organization: Personality, Theories, and Determinants; Pereception Meaning and Process.

Motivation : Concepts, Theories and Applications. Leadership—Theories and Styles. Quality of Work Life (QWL): Meaning and its impact on Performance, Ways of its Enhancement. Quality Circles (QC)—Meaning and their Importance. Management of Conflicts in Organizations. Transactional Analysis, Organizational Effectiveness, Management of Change.

Human Resources Management and Industrial Relations

1. **Human Resources Management (HRM) :**

Meaning Nature and Scope of HRM, Human Resource Planning, Job Analysis, Job Description, Job Specification, Recruitment Process, Selection Process, Orientational and Placement, Training and Development Process, Performance Appraisal and 360° Feed Back, Salary and Wage Administration, Job Evaluation, Employee Welfare, Promotions, Transfers and Separations.

2. **Industrial Relations (IR) :**

Meaning, Nature, Importance and Scope of IR, Formation of Trade Union, Trade Union Legislation, Trade Union Movement in India. Recognition of Trade Unions, Problems of Trade Unions in India. Impact of Liberalization on Trade Union Movement.

Nature of Industrial Disputes: Strikes and Lockouts, Causes of Disputes, Prevention and Settlement of Disputes.

Worker's Participation in Management: Philosophy, Rationale, Present Day Status and Future Prospects.

Adjudication and Collective Bargaining.

Industrial Relations in Public Enterprises Absenteeism and Labour Turnover in Indian Industries and their Causes and Remedies.

ILO and its Functions.

ECONOMICS

PAPER—I

1. **Advanced Micro Economics :**

(a) Marshallian and Walrasian Approaches to Price determination.

SEMESTER – I

FINANCIAL ACCOUNTING - I

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM101

COURSE OUTCOMES

After completion of the course the student is able to:

1. Acquire conceptual knowledge of basics of accounting.
2. Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP. 3. Describe the role of accounting information and its limitations.
4. Equip with the knowledge of accounting process and preparation of final accounts of sole trader. 5. Identify and analyze the reasons for the difference between cash book and pass book balances. 6. Recognize circumstances providing for increased exposure to errors and frauds.

Objective: To acquire conceptual knowledge of basics of accounting and preparation of final accounts of sole trader.

UNIT-I: ACCOUNTING PROCESS: Financial Accounting: Introduction – Definition – Evolution – Functions Advantages and Limitations –Users of Accounting Information- Branches of Accounting – Accounting Principles: Concepts and Conventions- Accounting Standards– Meaning – Importance – List of Accounting Standards issued by ASB -– Accounting System- Types of Accounts – Accounting Cycle- Journal- Ledger and Trial Baiance. (Including problems)

UNIT-II: SUBSIDIARY BOOKS: Meaning –Types - Purchases Book - Purchases Returns Book - Sales Book - - Sales Returns Book - Bills Receivable Book - Bills Payable Book – Cash Book - Single Column, Two Column, Three Column and Petty Cash Book - Journal Proper.(Including problems)

UNIT-III: BANK RECONCILIATION STATEMENT: Meaning – Need - Reasons for differences between cash book and pass book balances – Favourable and over draft balances – Ascertainment of correct cash book balance (Amended Cash Book) - Preparation of Bank Reconciliation Statement. (Including problems)

UNIT-IV: RECTIFICATION OF ERRORS AND DEPRECIATION: Capital and Revenue Expenditure – Capital and Revenue Receipts: Meaning and Differences - Differed Revenue Expenditure. Errors and their Rectification: Types of Errors - Suspense Account – Effect of Errors on Profit. (Including problems) Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortization and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method (Including problems)

UNIT-V: FINAL ACCOUNTS: Final Accounts of Sole Trader: Meaning -Uses -Preparation of Manufacturing, Trading and Profit & Loss Account and Balance Sheet – Adjustments – Closing Entries.(Including problems)

SUGGESTED READINGS: 1. Accountancy-I: Haneef and Mukherjee, Tata

McGraw Hill Company. 2. Principles & Practice of Accounting:
R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Introduction to Accountancy: T.S.Grewal, S.Chand and Co.
6. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.

SEMESTER – I

BUSINESS ECONOMICS

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM102

UNIT-I: INTRODUCTION:

Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Law of Diminishing marginal utility - Law of Equi- marginal utility.

UNIT- II: DEMAND ANALYSIS:

Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand –Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticity of Demand

UNIT-III: SUPPLY ANALYSIS:

Law of Supply - Factors influencing Supply - Market Equilibrium- Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

UNIT–IV: PRODUCTION ANALYSIS:

Concept of Production –production function-Total Production - Marginal Production - Average Production –returns to a factor- Law of Variable Proportions - Law of Returns to Scale - Isocost – Isoquants - Economies and Dis-economies of Scale.

UNIT-V: COST AND REVENUEANALYSIS:

Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches -Revenue Curves–relationship between total marginal and average revenues- --Break Even Analysis—Meaning – Assumptions – Uses and Limitations.

SUGGESTED READINGS:

1. Business Economics: V. G. Mankar, Himalaya Publishing House
2. Managerial Economics: Vanith Agrawal, Pearson Education
3. Business Economics: H. L. Ahuja, S. Chand & Co. Ltd.
4. Business Economics : R. K. Lekhi, Kalyani Publishers

5. Business Economics: D. M. Mithani, Himalaya Publishing House
6. Business Economics: P. N. Chopra, Kalyani Publishers
7. Essential of Business Economics: D. N. Dwivedi, Vikas Publishers
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

SEMESTER – I

BUSINESS ORGANISATION

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM103

UNIT-1: FUNDAMENTAL CONCEPTS:

Concepts of Business, Trade, Industry and Commerce - Classification - Relationship between Trade. Industry and Commerce - Nature of Business - Objectives of Business – Functions of Business- Social Responsibility of a business - Steps to Start an Enterprise

UNIT-II: BUSINESS ORGANIZATION:

Forms of Business Organization - Classification - Factors Influencing the Choice of Suitable Form of Organization - Sole Proprietorship – Meaning, Definition - Characteristics - Advantages and Disadvantages - Suitability of Sole Proprietorship - Partnership -Kinds of Partners - - Partnership Deed – - Meaning – Contents - Registration of Partnership Advantages and Disadvantages of Partnership - Suitability of Partnership - Limited liability partnership – Hindu Undivided Family - Meaning - Characteristics - Advantages and Disadvantages - Co- Operative Organization – Characteristics -Types of Co-Operative Societies - Limitations of Cooperatives.

UNIT-III: FORMATION OF JOINT STOCK COMPANY:

Joint Stock Company - Meaning - Definition - Characteristics - Advantages and Disadvantages - Kinds of Companies -Promotion - Stages of Promotion - Promoter - Characteristics - Kinds - Preparation of Important Documents - Memorandum of Association - Clauses - Articles of Association - Contents – Prospectus - Contents – Red herring Prospectus- Statement in lieu of Prospectus.

UNIT-IV: SOURCES OF FINANCE:

Industrial Finance - Long Term and Short Term Finance - Fixed and Working Capital Finance

- Sources of Corporate Finance (A brief introduction to Shares and Debentures, Retained Earnings, Underwriting, Inter Company Investments and Venture Capital, Angel Investors, lease, hire purchase, franchising) .

UNIT V: STOCK EXCHANGE AND MUTUAL FUNDS:

Stock Exchange, Functions — Working of Stock Exchanges, Mutual Funds –Importance, Functions, Types — Role of SEBI in Regulating Stock Exchanges and Mutual Funds in India

SUGGESTED READINGS:

1. Business Organization & Management: Sharma Shashi K. Gupta, Kalyani Publishers
2. Business Organization: Sharma Shashi K. Gupta, Kalyani publishers.
3. Organization & Management: R. D. Agarwal, McGraw Hill.
4. Modern Business Organization: S.A. Sherlekar, V.S. Sherlekar, Himalaya Publishing House
5. Business Organization & Management: C.R. Basu, Tata McGraw Hill
6. Business Organization & Management: R. N. Gupta, S. Chand,
7. Organizational Behaviour Text & Cases: V.S.P. Rao, Himalaya Publishing House
8. Business Organization & Management: Uma Shekaram, Tata McGraw Hill
9. Business Organization & Management: Niranjan Reddy & Surya Prakash, Vaagdevi publishers.
10. Business Organisation and Management, Dr. Neeru Vasihth, Tax Mann Publications.

SEMESTER – I

INFORMATION TECHNOLOGY

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM104

UNIT-I: INTRODUCTION:

Introduction to computers - Generations of computers – An overview of computer system - Types of computers - Input & Output Devices. Hardware:Basic components of a computer system - Control unit – ALU - Input/output functions - Memory – RAM – ROM – EPROM - PROM and Other types of memory.

UNIT-II: OPERATING SYSTEM (OS):

Meaning - Definition & Functions - Types of OS - Booting process - DOS – Commands (internal & external) - Wild card characters – Virus & Hackers – Cryptography & cryptology Windows: Using the Start Menu –Control Panel – Using multiple windows – Customizing the Desktop – Windows accessories (Preferably latest version of windows or Linux Ubuntu).

UNIT-III: WORD PROCESSING:

Application of word processing - Menus & Tool Bars - Word processor – Creating – Entering - Saving & printing the document - Editing & Formatting Text - Mail Merge and Macros (Preferably latest version of MS Word or Libre Office Writer).

UNIT-IV: SPREAD SHEET:

Application of work sheet/spread sheet - Menus & Tool bars - Creating a worksheet - Entering and editing of numbers - Cell referencing - Worksheet to analyze data with graphs & Charts.
Advanced tools: Functions – Formulae – Formatting numbers - Macros – Sorting- Filtering - Validation &Consolidation of Data (Preferably latest version of MS Excel or Libre Office Calc)

UNIT-V: POWER POINT PRESENTATION:

Application of Power Point Presentation – Menus & Tool bars – Creating presentations – Adding - Editing and deleting slides - Templates and manually creating presentation– Slide show – Saving - Opening and closing a Presentation –Types of slides - Slide Views - Formatting – Insertion of Objects and Charts in slides - Custom Animation and Transition (Preferably latest version of MS Power Point presentation - Libre Office Impress). Internet & Browsing:Services available on internet – WWW – ISP – Browsers. Multimedia: Application of multimedia – Images – Graphics-Audio and Video – IT security.

SUGGESTED READINGS:

1. Introduction to Computers: Peter Norton, McGraw Hill.
2. Fundamentals of Information Technology: Dr. NVN Chary, Kalyani Publishers.
3. Computer Fundamental: AnithaGoel, Pearson.
4. Information Technology Applications for Business: Dr. S. Sudalaimuthu, Himalaya
5. Introduction to Information Technology: ITL ESL, Pearson.
6. Introduction to Information Technology: V. Rajaraman, PHI.
7. Fundamental of Computers: Balaguruswamy, McGraw Hill.
8. PC Software under Windows: Puneet Kumar, Kalyani Publishers.
9. Information Technology and C language: Rajiv Khanna, New Age International.
10. Fundamentals of Information Technology: Alexis Leon, Vikas Publishing House.
11. Informational Technology: P. Mohan, Himalaya Publishing House.
12. Information Technology: R. Renuka, Vaagdevi Publishers.
13. OS-Linux Spoken Tutorials &Libre Office Spoken Tutorials by IIT Bombay.
14. Fundamentals of Information Technology: Rajiv Midha, Tax Mann Publications.

SEMESTER – II

FINANCIAL ACCOUNTING-II

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM201

UNIT-I: BILLS OF EXCHANGE: Bills of Exchange - Definition- Distinction between Promissory note and Bills of exchange Accounting treatment of Trade bills: Books of Drawer and Acceptor-Honour and Dishonour of Bills Renewal of bills- Retiring of bills under rebate- Accommodation bills.(Including problems) **UNIT-II: CONSIGNMENT ACCOUNTS:** Consignment – Meaning – Features– Proforma invoice - Account sales – Del credere commission-Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock –Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price. (Including problems)

UNIT-III: JOINT VENTURE ACCOUNTS: Joint Venture – Meaning –Features-Difference between Joint Venture and Consignment Accounting Procedure-Methods of Keeping Records for Joint Venture Accounts-Method of Recording in co-ventures books-Separate Set of Books Method-Joint Bank Account Memorandum Joint Venture Account (Including problems)

UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS: Single Entry System – Meaning -Features– Difference between Single Entry and Double Entry systems -Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems) **UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:** Non-Profit Organization – Meaning – Features – Receipts and Payments Account – Income and Expenditure Account – Balance Sheet(Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co. 2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta,Sultan Chand & Sons. 3. Accountancy–I: Tulasian, Tata McGraw Hill Co.
4. Accountancy–I: S.P. Jain & K.L Narang, Kalyani.
5. Advanced Accountancy-I: S.N.Maheshwari&V.L.Maheswari, Vikas.
6. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.

SEMESTER – II

MANAGERIAL ECONOMICS

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM202

UNIT-I: NATURE AND SCOPE OF MANAGERIAL ECONOMICS:

Characteristics of managerial economics – Nature and scope of managerial economics - Importance of managerial economics- Basic economic tools in managerial economics- managerial economist role and responsibility

UNIT-II: DEMAND FORECASTING:

Demand estimations for major consumer durables and non-durable products – Demand forecasting techniques: Statistical and Non-Statistical techniques.

UNIT–III: MARKET ANALYSIS:

Definition of market – Market structure (Perfect competition, Imperfect competition) – Price determination -Firms equilibrium in perfect competition, monopoly, monopolistic, oligopoly and duopoly

UNIT-IV: MACRO-ECONOMICS FOR MANAGERS:

National income – Concepts – Methods - Measurement of national income – GDP and GVA— Business cycles- nature –Phases – Causes—Inflation - Causes and control – Deflation and stagflation.

UNIT-V: FISCAL AND MONETARY POLICY

Fiscal Policy- deficits-budgetary deficit-primary deficit-revenue deficit-fiscal deficit-Objectives of FRBM Act - Monetary Policy- Objectives – Repo Rate- Reverse Repo Rate- CRR- SLR- Finance Commission-role and objectives

SUGGESTED READINGS:

1. Managerial Economics: Craig H Peterson and Jain, Pearson education
2. Managerial Economics: Gupta, Tata McGraw Hill
3. Managerial Economics: Maheshwari and Gupta, Sultan Chand & Sons
4. Managerial Economics: Dr. P.C. Thomas, Kalyani Publishers
5. Managerial Economics: H.L. Ahuja, S. Chand and Company
6. Managerial Economics: Mithani, Himalaya Publications
7. Managerial Economics: R.L. Varshney and K.L. M Maheshwari, Sultan Chand
8. Managerial Economics: P. Venkataiah and Surya Prakash, Vaagdevi Publishers
9. Managerial Economics: P.L. Mehta, Tata McGraw Hill
10. Managerial Economics: R.N. Chopra, Kalyani Publishers

11. Managerial Economics: D.N. Dwivedi, Vikas Publishers
12. Managerial Economics: Thomas, Maurice, Sarkar, Tata McGraw Hill

SEMESTER – II

PRINCIPLES OF MANAGEMENT

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM203

UNIT-I: INTRODUCTION

Management - Meaning - Characteristics - Administration Vs Management - Scope of Management - Importance of Management - Functions of Management - Levels of Management - Skills of Management -- Leader Vs. Manager - Scientific Management - Meaning - Definition - Objectives - Criticism – Fayol's 14 Principles of Management .

UNIT-II: PLANNING

Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages – Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits - Weaknesses

UNIT-III: ORGANIZING:

Organizing-Meaning, Definition – Organization Meaning, Definition - Process of Organizing - Principles of Organization - Types of Organization - Formal and Informal Organizations - Line, Staff Organizations - Line and Staff Conflicts - Functional Organization - - Span of Management - Meaning - Determining Span - Factors influencing the Span of Supervision

UNIT-IV : DELEGATION AND DECENTRALIZATION:

Authority – Meaning - Delegation - Definition - Characteristics: - Elements - Principles, Types of Delegation - Importance of Delegation : - Factors Influencing Degree of Delegation - Barriers - Guidelines for Making Delegation Effective - Centralization - Meaning – Decentralization- Meaning - Difference between Delegation and Decentralization.

UNIT-V: COORDINATION AND CONTROL:

Meaning - Definition - Principles of Coordination – Importance- Process of Coordination-techniques of Effective Coordination - Control - Meaning - Definition – relationship between planning and control- Steps in Control – Types (post, current and pre-control) - Requirements for effective control.

SUGGESTED READINGS:

1. Principles and Practice of Management: R. S. Gupta, B. D. Sharma, W.S. Bhalla, Kaylani
2. Management: Stephen P. Robbins, Person
3. Principles of Management: T Ramasamy, Himalaya Publication
4. Principles of Management Concept: Rajeshviwanathan, Himalaya Publication
5. Management Theory and Practices: P Subba Rao, Himalaya Publishing House
6. Essential of Management: Harold Kontz, McGraw Education
7. Principles of Management, Chandan JS, Vikas Publishers.
8. Fundamentals of Management, Dr. Pradeep Kumar, S. Chand
9. Principles of Management: Neeru Vasishth, Tax Mann Pulications.

SEMESTER – III

ADVANCED ACCOUNTING

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM201

UNIT-I: PARTNERSHIP ACCOUNTS-I: Meaning – Partnership Deed - Capital Accounts (Fixed and Fluctuating) – Admission of a Partner – Retirement and Death of a Partner (Excluding Joint Life Policy)(Including problems)

UNIT-II: PARTNERSHIP ACCOUNTS–II: Dissolution of Partnership – Insolvency of a Partner (excluding Insolvency of all partners) – Sale to a Company (Including problems)

UNIT-III: ISSUE OF SHARES, DEBENTURES, UNDERWRITING AND BONUS SHARES: Issue of Shares at par, premium and discount – Pro-rata allotment – Forfeiture and Re-issue of Shares – Issue of Debentures with Conditions of Redemption – Underwriting: Meaning – Conditions- Bonus Shares: Meaning – SEBI Guidelines for Issue of Bonus Shares – Accounting of Bonus Shares(Including problems)

UNIT-IV: COMPANY FINAL ACCOUNTS AND PROFIT PRIOR TO INCORPORATION: Companies Act 2013: Structure – General Instructions for preparation of Balance Sheet and Statement of Profit and Loss – Part-I: Form of Balance Sheet – Part-II: Statement of Profit and Loss – Preparation of Final Accounts of Companies - Profits Prior to Incorporation- Accounting treatment. (Including problems)

UNIT-V: VALUATION OF GOODWILL AND SHARES: Valuation of Goodwill: Need – Methods: Average Profits, Super Profits and Capitalization Methods -Valuation of Shares: Need –Net Assets, Yield and Fair Value Methods. (Including problems)

SUGGESTED READINGS: 1. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta,Sultan Chand & Sons. 2. Advanced Accountancy: Shukla and Grewal, S.Chand& Co. 3. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons. 4. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas. 5. Advanced Accountancy: Dr. G. Yogeshwaran, Julia Allen - PBP 6. Accountancy–III: Tulasian, Tata McGraw Hill Co. 7. Advanced Accountancy: Arulanandam; Himalaya. 8. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers. 9. Guidance Note on the Revised Schedule VI to the Companies Act, 1956, The Institute of Chartered Accounts of India. 10. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.

SEMESTER – III

INCOME TAX – I

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM202

INCOME TAX – I

UNIT–I: INTRODUCTION:

Direct and Indirect Taxes – Canons of Taxation - Features and History of Income Tax in India – Definitions and Basic Concepts of Income Tax: Assessee – Deemed Assessee – Assessee-in-default – Assessment Year – Previous Year - Income Tax general rule and Exemptions to the Rule– Person – Income – Gross Total Income – Total Income — Incomes Exempt from Tax.

Residential Status and Scope of Total Income: Meaning of Residential Status – Conditions applicable to an Individual Assessee – Incidence of Tax – Types of Incomes – Problems on computation of Total Income of an Individual based on Residential Status.

UNIT-II: AGRICULTURAL INCOME:

Introduction – Definition – Tests to determine Agricultural Income – Partly Agricultural and partly Non-Agricultural Income – Integration: conditions – provisions – computation of Tax on Integration process. Heads of income: Gross Total Income – Taxable Income – Income Tax Rates.

UNIT–III: INCOME FROM SALARIES:

Definition of „Salary" – Characteristics of Salary – Computation of Salary Income: Salary u/s 17(1) – Annual Accretion – Allowances – Perquisites – Profits in lieu of Salary – Deductions u/s. 16 – Problems on computation of Income from Salary.

UNIT–IV: INCOME FROM HOUSE PROPERTY:

Definition of „House Property" – Exempted House Property incomes– Annual Value – Determination of Annual Value for Let-out House and Self-occupied House – Deductions u/s.24 – Problems on computation of Income from House Property.

UNIT–V: PROFITS AND GAINS OF BUSINESS OR PROFESSION:

Definition of „Business and Profession" – Procedure for computation of Income from Business – Rules – Revenue and Capital nature of Incomes and Expenses – Allowable Expenses u/s. 30 to 37 – Expenses expressly disallowed – Deemed Profits – Valuation of Stock – Miscellaneous provisions u/s 44. Depreciation: Meaning – Conditions for charge of depreciation – Assets used for Business – Block of Assets – Rates of Depreciation – Miscellaneous Provisions about depreciation – Computation of Depreciation –problems on computation of Income from Business.Income from Profession: Rules– procedure – problems on computation of Income from Profession.

SUGGESTED READINGS:

1. Income Tax Law and Practice: V.P. Gaur & D.B Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B.B. Lal, Pearson Education.
4. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
5. Income Tax: Johar, McGrawHill Education.
6. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning.

SEMESTER – III

BUSINESS STATISTICS-I

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM203

UNIT-I: INTRODUCTION:

Origin and Development of Statistics – Definition - Importance and Scope - Limitations of Statistics - Distrust of Statistics.

Statistical Investigation: Planning of statistical investigation - Census and Sampling methods - Collection of primary and secondary data - Statistical errors and approximation - classification and Tabulation of data - Frequency distribution.

UNIT – II: DIAGRAMMATIC AND GRAPHIC PRESENTATION:

Diagrammatic presentation: One Dimensional and Two Dimensional Diagrams – Pictograms – Cartograms Graphic presentation: Technique of Construction of Graphs - Graphs of Frequency Distribution - Graphs of Time Series or Histograms.

UNIT-III: MEASURES OF CENTRAL TENDENCY:

Introduction –Significance -Arithmetic Mean- Geometric Mean - Harmonic Mean - Mode – Median - Quartiles and Percentiles - Simple and Weighted Averages - Uses and Limitations of different Averages.

UNIT-IV: MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS:

Measures of Dispersion: Significance - Characteristics - Absolute and Relative Measures - Range - Quartile Deviation - Mean Deviation- Standard Deviation - Coefficient of Variation.

Measures of Skewness - Karl Pearson"s Coefficient of Skewness - Bowley"s Coefficient of Skewness - Kelly"s Measure of Skewness – Kurtosis: Mesokurtosis, Platy kurtosis and Leptokurtosis.

UNIT-V: CORRELATION:

Meaning -Types - Correlation and Causation – Methods: Scatter Diagram - Karl Person's Coefficient of Correlation - Probable Error and Interpretation of Coefficient of Correlation - Rank Correlation - Concurrent Deviation Method.

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Statistics: E. Narayanan Nadar, PHI Learning
4. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata McGraw Hill
6. Fundamentals of Statistical: S. P Gupta, Sultan Chand
7. Business Statistics: J. K. Sharma, Vikas Publishers
8. Business Statistics: S. L Aggarwal, S. L. Bhardwaj, Kalyani Publications
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics - Theory, Methods and Applications: Sancheti D.C. & Kapoor V.K

SEMESTER – III

PROGRAMMING WITH C

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM204

UNIT-I: INTRODUCTION:

UNIT-I: INTRODUCTION TO C LANGUAGE, DATA TYPES AND I/O OPERATIONS:

Introduction: Types of Languages – History of C language – Basic Structure – Creating – Compiling - Linking and Executing the C Program - Pre-processors in "C".

Types and I/O operations: Keywords & Identifiers – Constants – Variables - Scope and Life of a Variable - Data types - Storage classes - Reading a character or values - Writing a character or value - Formatted Input and Output operations.

UNIT-II: OPERATORS, EXPRESSIONS AND DECISION MAKING:

Operators: Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special operators – Expressions: Arithmetic – Evaluation - Type conversions.

Decision Making & Looping: Introduction - If statements - If-else statements - Switch statements - Conditional statements - While statements - Do statements - For Statements.

UNIT-III: ARRAYS AND STRINGS:

Arrays: Introduction - Defining an array - Initializing an array - One dimensional array – Two dimensional array - Dynamic array.

Strings: Introduction - Declaring and initializing string variables - Reading and Writing strings - String handling functions.

UNIT-IV: BUILT-IN FUNCTIONS AND USER-DEFINED FUNCTIONS:

Built–in functions: Mathematical functions - String functions - Character functions - Date functions. User defined functions: Introduction - Need for user defined functions - Elements of functions - Return values and their types - Function declaration - Function calls - Recursive functions.

UNIT-V: STRUCTURES AND POINTERS:

Structures: Introduction - Declaring structures variables - Accessing structure members - Functions and Structures - Array of structures - Enumerated Data types - Introduction to Unions.

Pointers: Fundamentals - Understanding pointers - Address - Declaration of Pointers.

LAB: PROGRAMS USING C.

SUGGESTED READINGS:

1. Programming in ANSCI C: Balaguruswamy, McGraw Hill.
2. Programming in C: Ashok Kamthane, Pearson.
3. C How to Program: P.J. Deitel & H.M. Deitel, Pearson & PHI.
4. Programming in C: K.S. Kahlon, Kalyani Publishers.
5. Fundamental of C: Dr. N. Guruprasad, Himalaya Publishing House.
6. C: Learning and Building Business and System Applications: Susant Rout, PHI.
7. Mastering C: K.R. Venugopal, McGraw Hill.
8. Programming in C: J.B. Dixit, Firewal Media.
9. The C Programming Language: B.W.Kernighan & D.M.Ritchie, PHI.
10. C: The Complete Reference: H.Schildt, McGraw Hill.
11. Let Us C: Y.Kanetkar, BPB.
12. C++ Spoken Tutorials by IIT Bombay

SEMESTER – III

BUSINESS STATISTICS –I

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM302

COURSE OUTCOMES

After completion of the course the student is able to:

1. Express the fundamentals of Statistics.
2. Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data.
3. Calculate measures of central tendency, dispersion and asymmetry
4. Interpret the meaning of the calculated statistical indicators.
5. Choose a statistical method for solving practical problems.
6. Predict values of strategic variables using regression and correlation analysis.

Objective: to inculcate analytical and computational ability among the students.

UNIT-I: INTRODUCTION: Origin and Development of Statistics – Definition - Importance and Scope - Limitations of Statistics - Distrust of Statistics. Statistical Investigation: Planning of statistical investigation - Census and Sampling methods - Collection of primary and secondary data - Statistical errors and approximation - classification and Tabulation of data - Frequency distribution.

UNIT – II: DIAGRAMMATIC AND GRAPHIC PRESENTATION: Diagrammatic presentation: One Dimensional and Two Dimensional Diagrams – Pictograms – Cartograms Graphic presentation: Technique of Construction of Graphs - Graphs of Frequency Distribution - Graphs of Time Series or Histograms.

UNIT-III: MEASURES OF CENTRAL TENDENCY: Introduction –Significance -Arithmetic Mean- Geometric Mean - Harmonic Mean - Mode – Median - Quartiles and Percentiles - Simple and Weighted Averages - Uses and Limitations of different Averages.

UNIT-IV: MEASURES OF DISPERSION, SKEWNESS AND KURTOSIS: Measures of Dispersion: Significance - Characteristics - Absolute and Relative Measures - Range - Quartile Deviation - Mean Deviation- Standard Deviation - Coefficient of Variation. Measures of Skewness - Karl Pearson's Coefficient of Skewness - Bowley's Coefficient of Skewness - Kelly's Measure of Skewness – Kurtosis: Mesokurtosis, Platy kurtosis and Leptokurtosis.

UNIT-V: CORRELATION: Meaning -Types - Correlation and Causation – Methods: Scatter Diagram - Karl Person's Coefficient of Correlation - Probable Error and Interpretation of Coefficient of Correlation - Rank Correlation - Concurrent Deviation Method.

SUGGESTED READINGS: 1. Statistics for Management: Levin & Rubin, Pearson 2. Fundamentals of Statistics: Gupta S.C, Himalaya 3. Statistics: E. Narayanan Nadar, PHI Learning 4. Business Statstics – I: Dr. Obul Reddy, Dr. D. Shridevi - PBP 5. Business Statistics: Dr. J. K. Thukral, Taxmann Publications 6. Business Statistics: K. Alagar, Tata McGraw Hill 7. Fundamentals of Statistical: S. P Gupta, Sultan Chand 8. Business Statistics: J. K. Sharma, Vikas Publishers.

SEMESTER – III

CORPORATE ACCOUNTING

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM301

UNIT-I: COMPANY LIQUIDATION:

Meaning – Modes - Contributory Preferential Payments – Statements of Affairs - Liquidator"s Remuneration - Preparation of Liquidator"s Final Statement of Account (Including problems)

UNIT-II: AMALGAMATION (AS-14):

Amalgamation: In the nature of merger and purchase – Calculation of Purchase Consideration – Accounting Treatment in the books of transferor and transferee companies. (Including problems)

UNIT-III: INTERNAL RECONSTRUCTION AND ACQUISITION OF BUSINESS:

Internal Reconstruction: Accounting treatment – Preparation of final statement after reconstruction- Acquisition of business when new set of books are opened- Debtors and Creditors taken over on behalf of vendors- When same set of books are continued(Including problems)

UNIT-IV: ACCOUNTS OF BANKING COMPANIES:

Books and Registers maintained – Slip system of posting – Rebate on Bills Discounted – Non- Performing Assets – Legal Provisions relating to final accounts - Final Accounts. (Including problems)

UNIT-V: ACCOUNTS OF INSURANCECOMPANIES AND INSURANCE CLAIMS:

Introduction – Formats-Revenue Account–Net Revenue Account - Balance Sheet - Valuation Balance Sheet – Net Surplus – General Insurance - Preparation of final accounts with special reference to Fire and Marine Insurance - Insurance claims- Meaning – Loss of Stock and Assets
– Average Clause – Treatment of Abnormal Loss - Loss of Profit. (Including problems)

SUGGESTED READINGS:

1. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas.
2. Accountancy–III: Tulasian, Tata McGraw Hill Co.
3. Advanced Accountancy: Arulanandam; Himalaya
4. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers
5. Advanced Accounting (Vol-II): Chandra Bose, PHI
6. Advanced Accountancy: Shukla and Grewal, S.Chand& Co
7. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand & Sons
8. Corporate Accounting: Sakshi Vasudeva, Himalaya.

SEMESTER – III

INCOME TAX – II

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM302

UNIT-I: CAPITAL GAINS:

Introduction - Meaning – Scope of charge – Basis of charge – Short term and Long term Capital Assets – Transfer of Capital Asset – Deemed Transfer – Transfer not regarded as Transfer – Determination of Cost of Acquisition – Procedure for computation of Long-term and Short-term Capital Gains/Losses – Exemptions in respect of certain Capital Gains u/s. 54 – Problems on computation of capital gains.

UNIT–II: INCOME FROM OTHER SOURCES:

General Incomes u/s. 56(1) – Specific Incomes u/s. 56(2) – Dividends u/s. 2(22) – Interest on Securities – Gifts received by an Individual – Casual Income – Family Pension – Rent received on let out of Furniture-Plant and Machinery with/without Building – Deductions u/s. 57 - Problems on computation on Income from Other Sources.

UNIT-III: CLUBBING AND AGGREGATION OF INCOME:

Income of other persons included in the total income of Assessee – Income from Firm and AOP – Clubbing Provisions – Deemed Incomes – Provisions of set-off and Carry forward of losses – computation of Gross Total Income – Deductions from GTI u/s 80C to 80U – Problems on Computation of Taxable Income

UNIT-IV: ASSESSMENT OF INDIVIDUALS:

Computation of Tax Liability – Applicability of Alternate Minimum Tax on Individual u/s 115JC – Problems on Computation of tax liability

UNIT–V: ASSESSMENT PROCEDURE:

Income tax returns – Types of returns – Filing of e-return – Assessment – Types of assessment – Self assessment – Provisional assessment – Regular assessment – Best judgement assessment – Reassessment – Rectification of mistakes – Notice on demand.

SUGGESTED READINGS:

1. Income Tax Law and Practice:V.P. Gaur & D.B- Narang, Kalyani Publishers.
2. Direct Taxes Law & Practice: Dr. Vinod K. Singhania & Dr. Kapil Singhania, Taxmann
3. Income Tax: B. Lal, Pearson Education.
4. Income Tax: M.Jeevarathinam & C. Vijay Vishnu Kumar, SCITECH Publications.
5. Taxation: R.G. Saha, Himalaya Publishing House Pvt. Ltd.
6. Income Tax: Johar, McGrawHill Education.
7. Taxation Law and Practice: Balachandran & Thothadri, PHI Learning

SEMESTER – III

BUSINESS STATISTICS-II

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM303

UNIT-I: REGRESSION:

Introduction - Linear and Non Linear Regression – Correlation Vs. Regression - Lines of Regression - Derivation of Line of Regression of Y on X - Line of Regression of X on Y - Using Regression Lines for Prediction.

UNIT-II: INDEX NUMBERS:

Introduction - Uses - Types - Problems in the Construction of Index Numbers - Methods of Constructing Index Numbers - Simple and Weighted Index Number (Laspeyre - Paasche, Marshall – Edgeworth) - Tests of Consistency of Index Number: Unit Test - Time Reversal Test
- Factor Reversal Test - Circular Test - Base Shifting - Splicing and Deflating of Index Numbers.

UNIT-III: TIME SERIES:

Introduction - Components – Methods-Semi Averages - Moving Averages – Least Square Method - Deseasonalisation of Data – Uses and Limitations of Time Series.

UNIT-IV: PROBABILITY:

Probability – Meaning - Experiment – Event - Mutually Exclusive Events - Collectively Exhaustive Events - Independent Events - Simple and Compound Events - Basics of Set Theory
– Permutation – Combination - Approaches to Probability: Classical – Empirical – Subjective - Axiomatic - Theorems of Probability: Addition – Multiplication - Baye"s Theorem.

UNIT-V: THEORETICAL DISTRIBUTIONS:

Binomial Distribution: Importance – Conditions – Constants - Fitting of Binomial Distribution. Poisson Distribution: – Importance – Conditions – Constants - Fitting of Poisson Distribution. Normal Distribution: – Importance - Central Limit Theorem - Characteristics – Fitting a Normal Distribution (Areas Method Only).

SUGGESTED READINGS:

1. Statistics for Management: Levin & Rubin, Pearson,
2. Fundamentals of Statistics: Gupta S.C, Himalaya
3. Business Statistics: Theory & Application, P. N. Jani, PHI Learning
4. Business Statistics: Dr. J. K. Thukral, Taxmann Publications
5. Business Statistics: K. Alagar, Tata Mc Graw Hill
6. Fundamentals of Statistical: S. P Gupta , Sultan Chand
7. Business Statistics: J. K. Sharma,Vikas Publishers
8. Business Statistics: Vora, Tata Mc Graw Hill
9. Statistics-Problems and Solutions: Kapoor V.K, S. Chand
10. Statistics-Teory, Methods and Applications: SanchetiD.C. & Kapoor V.K
11. Business Statistics: S. K. Chakravarty, New Age International Publishers
12. Business Statistics-G.Laxman,Vasudeva Reddy, K.Goud, TaxmannPublications,Hyderabad.

SEMESTER – III

OBJECT ORIENTED PROGRAMMING IN C++

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM304

UNIT-I: INTRODUCTION:

Object Oriented Programming: Concepts – Benefits – Languages - Structured vs. Object Oriented Programming. C++: Genesis - Structure of a program – Tokens - Data Types – Operators - Control Structures - C vs C++ - Functions.

UNIT-II: CLASSES, OBJECTS, CONSTRUCTORS AND DESTRUCTORS:

Encapsulation - Hiding - Abstract data types - Object & Classes – Attributes - Methods - C++ class declaration - State identity and behaviour of an object. Purpose of Constructors - Default Constructor - Parameterized Constructors - Copy Constructor - Instantiation of objects - Default parameter value - Object types - C++ garbage collection - Dynamic memory allocation – Meta class / Abstract classes.

UNIT-III: OVERLOADING, CONVERSIONS, DERIVED CLASSES AND INHERITANCE:

Function and Operator Overloading - Overloading Unary and Binary Operators - Data and Type Conversions - Derived Classes - Concept of Reusability - Visibility modes - Types of Inheritance
- Single and Multiple Inheritance - Multilevel Inheritance.

UNIT-IV: POLYMORPHISM, VIRTUAL FUNCTION, STREAMS AND FILES:

Polymorphism - Virtual - Classes - Pointer to Derived class - Virtual functions - Rules for Virtual function - Pure Virtual functions - Stream Classes - Types of I/O - Formatting Outputs - File Pointers – Buffer - C++ Stream - Unformatted console I/O operations – Functions: get( ) - put( ) – formatted console I /O operations - IOS class format functions - Manipulators.

UNIT–V: EXCEPTION HANDLING AND DATA STRUCTURES IN C++:

Exceptions in C++ Programs - Try and Catch Expressions - Exceptions with arguments. Data Structures: Introduction - Linked list - Stacks - Queues.

SUGGESTED READINGS:

1. Objected Oriented Programming with C++: E. Balagurusamy, McGraw Hill.
2. C++ Programming-A Practical Approach: Madhusudan Mothe, Pearson.
3. Object Oriented Programming Using C++: Chadha & Chadha, Kalyani.
4. Programming in C++: A. N. Kamthane, Pearson.
5. The Complete Reference C++: H. Schildt, McGraw Hill.
6. C++:How to Program: Deitel & Deitel, PHI.
7. Mastering C++: KR.Venugopal & R.Buyya, McGraw Hill.
8. Schaum"s Outlines: Programming with C++: by John R Hubbard.
9. Object Oriented Programming using C++: Somashekara, PHI.
10. C++ Spoken Tutorials by IIT Bombay.

SEMESTER – V

COST ACCOUNTING

Applicable from the academic year 2016-17onwards

COURSE CODE : BCOM501

COURSE OUTCOMES

After completion of the course the student is able to:

1. Imbibe conceptual knowledge of cost accounting.
2. Select the costs according to their impact on business.
3. Differentiate methods of schedule costs per unit of production and calculating stock consumption. 4. Identify the specifics of different costing methods and interpret the impact of the selected costs method. 5. Apply cost accounting methods to evaluate and project business performance.
6. Demonstrate mastery of costing systems, cost management systems, budgeting systems and performance measurement system.

Objective: To make the students acquire the knowledge of cost accounting methods.

UNIT-I: INTRODUCTION: Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting – Cost concepts – Cost Classification.

UNIT-II: MATERIAL: Direct and Indirect Material cost – Inventory Control Techniques – Stock Levels – EOQ – ABC Analysis – JIT - VED - FSND - Issue of Materials to Production – Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods.

UNIT-III: LABOUR AND OVERHEADS: Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods. Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads.

UNIT-IV: UNIT AND JOB COSTING: Unit Costing: Features - Cost Sheet – Tender and Estimated Cost Sheet. Job Costing: Features - Objectives – Procedure - Preparation of Job Cost Sheet.

UNIT-V: CONTRACT AND PROCESS COSTING: Contract Costing: Features – Advantages - Procedure of Contract Costing – Guidelines to Assess profit on incomplete Contracts. Process Costing: Meaning – Features – Preparation of Process Account – Normal and Abnormal Losses.

SUGGESTED READINGS: 1. Cost Accounting: Jain and Narang, Kalyani 2. Cost Accounting: Srihari Krishna Rao, Himalaya 3. Cost and Management Accounting: PrashantaAthma, Himalaya 4. Cost Accounting: Dr. G. Yogeshweran, PBP. 4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill 5. Cost Accounting: Theory and Practice: Banerjee, PHI 6. Introduction to Cost Accounting: Tulsian, S.Chand 7. Cost Accounting: Horngren, Pearson 8. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.

SEMESTER – V

BUSINESS LAW

Applicable from the academic year 2016-17onwards

COURSE CODE : BCOM502

UNIT–I: INTRODUCTION:

Development of Business Law - Development of Law in Independent India Contract Act 1872: Agreement and contract - Essentials of a valid contract - Types of contracts - Offer and Acceptance - Essentials of valid offer and acceptance - Communication and revocation of offer and acceptance – Consideration definition - Essentials of valid consideration - Doctrine of "Stranger to a contract"- "No consideration- No contract" - Capacity to a contract - Minors agreements.

UNIT–II: CONTRACT ACT 1872:

Legality of Object and Consideration - Agreements Expressly Declared To Be Void - Wagering Agreements - Contingent Contracts.

Discharge of Contract: Modes of Discharge - Performance of Contracts - Breach of Contract - Remedies for Breach.

UNIT–III: SALE OF GOODS ACT 1930:

Contract of Sale: Essentials of Valid Sale - Sale and Agreement to Sell – Definition and Types of Goods - Conditions and Warranties - Caveat Emptor - Exceptions - Transfer or Passing of Property: Time When Property Passes, Rules of Transfer of Property, Transfer of Ownership - Sale by Non-Owners and its Exceptions - Unpaid Seller - Rights of Unpaid Seller.

Consumer Protection Act 1986: Definitions of Consumer – Person – Goods - Service -Consumer Dispute - Unfair Trade Practice - Restrictive Trade Practice – Defect - Deficiency - Consumer Protection Councils - Consumer Dispute Redressal Agencies - District Forum - State Commission and National Commission - Procedure to Lodge a Complaint for Redressal – Appeals.

UNIT–IV: TRADE MARKS, PATENTS, COPY RIGHTS & INTELLECTUAL PROPERTY RIGHTS:

Trade Marks: Definition - Procedure for Registration of Trade Marks - Patents: Definition - Kinds of Patents - Transfer of the Patent Rights - Rights of the Patentee - Copy Rights: Definition - Essential Conditions for Copy Rights to be Protected - Rights of the Copyright Owner - Terms of Copy Right - Copy Rights Infringement - Other Intellectual Property Rights: Trade Secrets - Geographical Indications.

UNIT–V: INFORMATION TECHNOLOGY ACT & ENVIRONMENTAL PROTECTION ACT:

Information Technology Act-2000: Objectives - Digital Signature - Electronic Governance - Penalties and Adjudication.

Environmental Protection Act 1986: Object - Scope and Scheme of the Act – Definitions - General Powers of the Central Government – Prevention - Control and Abetment of Environmental Pollution – Offences and Penalties.

SUGGESTED READINGS:

1) Company Law: Kapoor, Sultan Chand and Co.
2) Business Law: Sandhya KVN, Himalaya
3) Business Laws: KC Garg & RC Chawla , Kalyani Publishers.
4) Business Law: Prof. G. Krishna Murthy, PBP.

SEMESTER – V

BANKING THEORY AND PRACTICE

Applicable from the academic year 2016-17onwards

COURSE CODE : BCOM503

UNIT-I: INTRODUCTION:

Origin and Growth of Banking in India - Unit Vs Branch Banking - Functions of Commercial Banks - Nationalization of Commercial Banks in India - Emerging Trends in Commercial Banking in India: E-Banking – Mobile Banking - Core Banking – Bank Assurance – OMBUDSMAN.

UNIT-II: RESERVE BANK OF INDIA:

RBI Constitution - Organizational Structure – Management - Objectives – Functions – Monetary Policy.

UNIT-III: TYPES OF BANKS:

District Co-Operative Central Banks – Contemporary Banks - Regional Rural Banks - National Bank for Agriculture and Rural Development (NABARD) – SIDBI – Development Banks.

UNIT-IV: BANKER AND CUSTOMER RELATIONSHIP:

Definition of Banker and Customer - Relationship Between Banker and Customer - KYC norms - General and Special Features of Relationship - Opening of Accounts - Special Types of Customers Like Minor, Married Women, Partnership Firms, Companies, Clubs and other Non- Trading Institutions.

UNIT-V: NEGOTIABLE INSTRUMENTS:

Descriptions and their Special Features - Duties and Responsibilities of Paying and Collecting Banker - Circumstances under which a Banker can refuse Payment of Cheques - Consequences of Wrongful Dishonors - Precautions to be taken while Advancing Loans Against Securities – Goods - Documents of Title to Goods - Loans against Real Estate -Insurance Policies - Against Collateral Securities – Banking Receipts.

Rule in Clayton's Case - Garnishee Order – Loans against Equitable Mortgage - Legal Mortgage - Distinction between them - Latest Trends in Deposit Mobilization.

SUGGESTED READINGS:

1. Banking Theory & Practices: Dr. P. K. Srivatsava, Himalaya Publishers
2. Banking Theory & Practices: K.E. Shekar, Vikas Publications
3. Banking theory & Practices: Santhi Vedula, HPH.
4. Banking Theory & Practices: Dr. J. Jayanthi, PBP.
5. Banking Theory, Law & Practices: R. R Paul, Kalyani Publishers
6. Money Banking and Financial Markets: Averbach, Rabort. D, MacMillan. Landon
7. Banking: N.T. Somashekar, New Age International Publishers
8. Fundamentals of International Banking: Rup Narayan Bose, Trinity Publishers
9. Modern Commercial Banking: H.R. Machiraju, New Age International Publishers

SEMESTER – V

EXCEL FOUNDATION

Applicable from the academic year 2016-17onwards

COURSE CODE : BCOM504

UNIT-I: **INTRODUCTING EXCEL:** Workbooks and Worksheets, Moving Around a Worksheet, Ribbon tabs, Types of commands on the Ribbon, Using Shortcut Menus, Working with Dialogue Boxes, Task Panes, Getting started on your worksheet, Creating a chart, Printing your worksheet, Saving your worksheet, Exploring Data Types, Modifying Cell Contents, Deleting, Replacing, Editing of a cell. Some handy data entry techniques, Number Formatting.

UNIT-II: **WORKSHEET OPERATIONS:** Moving and resizing windows, Switching among windows, Activating a worksheet, Adding, Deleting a worksheet, Changing a sheet tab color, Rearranging your worksheets, Hiding, un-hiding a worksheet, Worksheet View, Comparing sheets side by side, Selecting ranges, complete rows and columns, noncontiguous ranges, multi- sheet ranges, special types of cells. Copying or Moving Ranges. Paste Special dialogue box, Adding comments to cells.

UNIT-III: **TABLES AND FORMATTING:** Creating a Table, Changing the Look of a Table, Navigating in a Table, Selecting parts of a Table, Adding, Deleting new rows or columns, Moving a Table, Working with the Total Row, Removing duplicate rows from a table. Sorting and filtering a table, Converting Table into Range. Formatting tools on the Home tab, Mini Toolbar, Fonts, Text Alignment, Wrapping text to fit a cell, Colors and Shading, Borders and Lines. Naming Styles.

UNIT–IV: **EXCEL FILES & TEMPLATES:** Creating a New Workbook, Filtering filenames, Saving and Auto Recovery, Password-Protecting a Workbook, Recovering unsaved work, Protect Workbook options, Checking Compatibility. Creating a Excel Templates, Modifying a template, Custom Excel Templates, Default Templates, Editing your Template, Resetting the default workbook, Saving your Custom Templates, Getting ideas for creating Templates.

UNIT–V: **PRINTING YOUR WORK:** Normal, Page Layout, Page Break View, Choosing your printer, Specifying what you want to print, Changing Page Orientation, Specifying paper size, Adjusting page margins, Inserting a page break, Removing manual page breaks, Printing Row and Column Titles, Scaling printed output, Header or Footer Options, Preventing certain cells, Objects from being printed, Creating Custom Views of your Worksheet. Creating PDF files.

Introducing Excel:

SUGGESTED READINGS:

1. Excel 2013 Bible: John Walkenbach, Wiley.
2. Microsoft Excel 2013: Data Analysis and Business Modeling: Winston, PHI
3. Excel Data Analysis - Modeling and Simulation: Hector Guerrero, Springer.
4. Excel Functions and Formulas: Bernd Held, BPB Publications.
5. Financial Analysis and Modeling using Excel and VBA: Chandan Sengupta, Wiley

SEMESTER – V

COMPUTERIZED ACCOUNTING

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM505

COURSE OUTCOMES

After completion of the course the student is able to:

1. Acquire the knowledge of computer software.
2. Understand the limitations of manual accounting and advantages of computerized accounting. 3. Integrate technical skills with financial accounting procedures.
4. Explain the process of maintaining inventory and day-to-day transactions in Tally accounting software. 5. Manage account receivables and payables in ERP.
6. Able to generate MIS reports.

Objective: To make the students to acquire the knowledge of computer software

UNIT I: MAINTAINING CHART OF ACCOUNTS IN ERP: Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shut a Company-Select a Company-Alter Company Details-Company Features and ConfigurationsF11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger CreationSingle Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation Multiple Group Creation-Displaying Groups and LedgersDisplaying Groups-Display of Ledgers-Deletion of Groups and Ledgers – P2P procure to page.

UNIT II: MAINTAINING STOCK KEEPING UNITS (SKU): Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock GroupCreation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports. **UNIT III: RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:** Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)-Contra Voucher (F4)- Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)- Journal Voucher (F7).

UNIT IV: ACCOUNTS RECEIVABLE AND PAYABLE MANAGEMENT: Introduction-Accounts Payables and Receivables Maintaining Bill-wise Details-Activation of Maintain Bill-wise Details Feature-New Reference-Against Reference Advance-On AccountStock Category Report-Changing the Financial Year in ERP.

UNIT V: MIS REPORTS: Introduction-Advantages of Management Information Systems-MIS Reports in ERP - Trial Balance - Balance Sheet-Profit and Loss Account-Cash Flow Statement-Ratio Analysis-Books and Reports - Day Book-Receipts and Payments-Purchase Register-Sales Register-Bills Receivable and Bills Payable. **SUGGESTED READINGS:** 1. Computerised Accounting: GarimaAgarwal, Himalaya 2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications 3. Computerised Accounting: Dr. G. Yogeshweran, PBP. 4. Aakash Business Tools: Spoken Tutorial Project IIT Bombay 5. Mastering Tally: Dinesh Maidasani, Firewal Media 6. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications 7. Computerised Accounting and Business Systems: Kalyani Publications 8. Manuals of Respective Accounting Packages 9. Tally ERP 9: J.S. Arora, Kalyani Publications.

SEMESTER – V

WEB TECHNOLOGIES

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM506

UNIT-I: INTRODUCTION:

Art of creating a web site - Markup language (HTML) – Hypertext - Formatting text - Forms & formulating instructions & formulation elements – Commenting code – Anchors - Back grounds – Images - Hyperlinks – Lists –Tables – Frames - Web design principles.

UNIT-II: AN OVER VIEW OF DYNAMIC WEB PAGES & DYNAMIC WEB PAGE:

An over view of dynamic web pages and dynamic web page technologies: Introduction to Dynamic HTML programing - Cascading style sheets (CSS) - Basic syntax and structure -Events handling - Changing Text and Attributes - Dynamically changing style - Text Graphics and placements - Creating multimedia effects with filters and Transactions.

UNIT-III: JAVA SCRIPT:

Introduction - Client side Java script - Server side Java script - Core features - Data types and variables – Operators - Expressions and statements – Functions – Objects – Array - Date and math related objects - Document object model - Event handling.

UNIT-IV: EVENTS AND EVENT HANDLERS:

General information about Events – Event – OnAbort – OnClick - Ondbl click - Ondrag drop – Onerror - Onfocus - Onkey Press – Onkey Up – Onload - Onmouse Down – Onmouse Move - Onmouse Out – Onmouse Over - Onmove - Onrest – Onresize - Onselect - On submit - Onunload.

UNIT-V: EXTENSIBLE MARKUP LANGUAGE (XML):

Introduction - Creating XML Documents - XML style Sheet - Hyperlinksin XML Document Object Model - XML Query Language.

LAB WORK: CREATING A WEBSITE WITH DYNAMIC FUNCTIONALITY USING CLIENT-SIDE AND SERVER SIDE SCRIPTING.

SUGGESTED READINGS:

1. Web Technology: Pradeep Kumar, HPH
2. Internet & World Wide Web How to Program: Deitel & Deitel, Pearson.
3. Web programming: Chris Bates.
4. HTML & XML An Introduction NIIT, PHI.
5. HTML for the WWW with XHTML & CSS: Wlizabeth Castro, Pearson
6. Internet and Web Technologies: Raj Kamal, McGraw Hill.
7. Web Technology: A Developer's Perspective: Gopalan & Sivaselvan, PHI.
8. The Complete Reference PHP: S. Holzner, McGraw Hill.
9. Internet Technology and Web Page Design: R.Singh&M.Sonia, Kalyani.
10. Web Programming using PHP and MySQL: A.Babu, K.Meena & Sivakumar, HP

SEMESTER – VI

THEORY AND PRACTICE OF GST

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM601

UNIT I: INTRODUCTION TO GST: Introduction – GST - Taxes Subsumed under GST -Determination of Tax - Registration -Process of Registration - Cancellation and renovation of registration - Supply of Goods and Services - Transition to GST - Registered Business -Availed Input Tax Credit -Unavailed CENVAT credit and Input VAT on capital goods-Availing the input credit held in closing stock - Invoicing -Tax Invoice -Bill of Supply - Credit Note, Debit Note and Supplementary Invoice-Transportation of goods without issue of Invoice - Input Credit Mechanism - Input Tax - GST Returns - Payment of Tax.

UNIT II: GETTING STARTED WITH GST: Introduction - Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods-Intrastate Inward Supply - Intrastate Outward Supply -Interstate - Interstate Outward Supply - Return of Goods -Purchase Returns -Sales Returns -Supplies Inclusive of Tax -Defining Tax Rates at Master and Transaction Levels - Defining GST Rates at Stock Group Level-Defining GST Rate at Transaction Level -Hierarchy of Applying Tax Rate Details –Reports.

UNIT III: RECORDING ADVANCED ENTRIES, GST ADJUSTMENT AND RETURN FILING: Introduction -Accounting of GST Transactions -Purchases from Composition Dealer -Purchases from Unregistered Dealers-Exports -Imports - Exempted Goods -SEZ Sales -Advance Receipts and payments - Mixed Supply and Composite Supply under GST - Mixed Supply of Goods -Composite Supply of Goods -GST Reports - Generating GSTR- Report in ERP -Input Tax Credit Set Off -GST Tax Payment -Time line for payment of GST tax -Modes of Payment -Challan Reconciliation - Exporting GSTR- return and uploading in GST portal. **UNIT IV: GETTING STARTED WITH GST (SERVICES):** Introduction -Determination of supply of services -Determining the Place of Supply of Services -Enabling GST and Defining Tax Details-Transferring Input Tax credit to GST -Intrastate Supply of Goods - Intrastate Inward Supply Intrastate Outward Supply -Interstate Supply - Interstate Outward Supply - Interstate Inward Supply -Interstate Outward Supply of Services - Cancellation of Services -Cancellation of Inward Supplies -Cancellation of Outward Supply of Services -Defining Tax Rates at Master and Transaction Levels.

UNIT V: RECORDING ADVANCED ENTRIES AND MIGRATION TO ERP: Introduction - Accounting Multiple Services in a Single Supply - Recording Partial Payment to Suppliers -Outward Supplies - Recording Outward Supply with Additional Expenses - Supply of services -Business to consumers - Time of Supply of Services - Place of Supply of Services - Determining place of supply of services - Exempt Supply of Services under GST -Export Supply of Services - Reverse Charge on Services under GST - Advance Receipts from Customers under GST - Advance Receipt and issuing Invoice on same month -Advance Receipt and issuing Invoice on different month - Reversal of GST on account of cancellation of advance receipt - Generating GSTR- Report in ERP - Input Tax Credit Set Off - Migration to ERP - Activate Goods and Services Tax (GST) in ERP - Set up GST rates - Update Masters - Update party GSTIN/UIN - Creation of GST Duty ledgers.

SUGGESTED READINGS: 1. Taxmann's Basics of GST 2. Taxmann's GST: A practical Approach 3. Theory & Practice of GST, Srivathsala, HPH 4. Theory & Practice of GST: Dr. Ravi M.N, PBP.

SEMESTER – VI

COMPANY LAW (2013Act)

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM602

UNIT-I: INCORPORATION OF COMPANIES:

Company: Meaning and Definition – Characteristics - Classification – Legislation on Companies – Incorporation - Promotion – Registration - Memorandum of Association – Articles of Association – Certificate of Incorporation - Prospectus – Statement in lieu of Prospectus – Commencement of business.

UNIT–II: MANAGEMENT OF COMPANIES:

Director: Qualification - Disqualification - Position - Appointment - Removal – Duties and Liabilities – Loans – Remuneration – Managing Director – Corporate Social Responsibility – Corporate Governance.

UNIT–III: COMPANY SECRETARY:

Company Secretary: Definition – Appointment – Duties – Liabilities – Company Secretary in Practice – Secretarial Audit.

UNIT–IV: COMPANY MEETINGS:

Meeting: Meaning – Requisites - Notice – Proxy - Agenda – Quorum – Resolutions – Minutes – Kinds – Shareholder Meetings - Statutory Meeting - Annual General Body Meeting – Extraordinary General Body Meeting – Board Meetings.

UNIT–V: WINDING UP:

Meaning – Modes of Winding Up –Winding Up by tribunal – Voluntary Winding Up – Compulsory Winding Up – Consequences of Winding Up – Removal of name of the company from Registrar of Companies – Insolvency and Bankruptcy code - 2016.

SUGGESTED READINGS:

1) Company Law: ND Kapoor, Sultan Chand and Co.
2) Company Law: Rajashree. – HPH
3) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
4) Company Law and Practice: GK Kapoor & Sanjay Dhamija, Taxmann Publication.
5) Company Law: Revised as per Companies Act- 2013: KC Garg et al, Kalyani Publication.
6) Corporate Law: PPS Gogna, S Chand.
7) Company Law: Bagrial AK: Vikas Publishing House.

SEMESTER – VI

MANAGERIAL ACCOUNTING

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM603

UNIT-I: INTRODUCTION:

Managerial Accounting: Features – Objectives – Scope – Functions – Advantages and Limitations – Relationship between Cost, Management and Financial Accounting.

UNIT-II: MARGINAL COSTING:

Meaning – Importance – Marginal Cost Equation – Difference between Marginal Costing and Absorption Costing – Application of Marginal Costing – CVP Analysis – Break Even Analysis: Meaning – Assumptions – Importance - Limitations.

UNIT-III: DECISION MAKING:

Make or Buy – Add or Drop Products – Sell or Process Further – Operate or Shut-down – Special Order Pricing – Replace or Retain.

UNIT-IV: BUDGETS AND BUDGETARY CONTROL:

Budget: Meaning – Objectives – Advantages and Limitations – Essentials of Budgets - Budgetary Control - Classification of Budgets - Preparation of Budgets.

UNIT-V: STANDARD COSTING AND VARIANCE ANALYSIS:

Standard Costing: Meaning – Importance – Standard Costing and Historical Costing - Steps involved in Standard Costing.

Variance Analysis: Material variance - Labour variance - Overhead variance - Sales variance.

SUGGESTED READINGS:

1. Management Accounting- Principles & Practice: Sharma RK & Shashi K. Gupta, Kalyani
2. Advanced Managerial Accounting: Srihari Krishna Rao, Himalaya
3. Advanced Managerial Accounting: Dr. Sundaram, PBP
3. Advanced Management Accounting: Robert S. Kaplan & Anthony A. Atkinson, Prentice-Hall
4. Management Accounting: Rustagi R.P, Galgotia
5. Managerial Accounting: Ronald W. Hilton, TMH

SEMESTER – VI

COMMERCE LAB

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM604

UNIT-I: BASIC BUSINESS DOCUMENTS:

Trade license under Shops and Establishments Act - Labor license from Department of labor - Partnership Deed - Pollution, Health licenses – Quotation - Invoice form and preparation - Computation of simple interest, compound interest and EMI - Way bill used during transport - Debit Note and Credit Note - Audit Report.

UNIT-II: FINANCE, BANKING AND INSURANCE DOCUMENTS:

Promissory Note - Bill of exchange – Cheque - Pay in slip - Withdrawal form - Account opening and Nomination form KYC - Deposit form and Deposit Receipts - Loan application form - Insurance Proposal form and Insurance Policy - ATM Card Application form - Credit appraisal report - Insurance agency application procedure - ESI / PF membership form.

UNIT-III: DOCUMENTS FOR INCORPORATION A COMPANY:

Memorandum of Association - Articles of Association - Certificate of Incorporation – Prospectus - Certificate of Commencement of Business - Annual Report – Chairman's Speech - Model bye- laws of some society - Society/ Trust registration form - Complaint in a Consumer forum - Complaint under Right to Information Act.

UNIT-IV: DOCUMENTS OF TAXATION:

PAN application under Income Tax Act - TAN application under Income Tax Act - Form:16 to be issued by Employer - TDS and its certificate u/s15 - Income Tax payment challans and Refund Order - Income Tax Returns including TDS Return - Notices under Income Tax Act - Assessment Order - GST Dealer-Application and License - Registration under GST.

UNIT-V: BUSINESS CHARTS:

Elements of business - Forms of business organizations - Procedure of incorporation of companies - Classification of partners with salient features of each of them - International, National, State level and Regional entrepreneurs - Hierarchy of Banking business in India - Tax administration in India - Various taxes imposed in India - Export and import procedure - Purpose and powers of authorities like RBI, SEBI, IRDA, ROC.

COMMERCE LAB FACILITIES:

i) Colleges are required to provide a commerce lab containing all the documents related to commerce and facilities as, computer, printer, OHP, LCD Projector with sufficient furniture.

ii) Teachers should practically explain the documents and help in filling the same in the simulated environment.

iii) Students are required to do the above personally and gain the knowledge of filling the above documents and the same are to be kept in a portfolio.

iv) At the end of semester, the portfolios would be evaluated by the external examiner designated by the Controller of Examinations, Osmania University, from the panel submitted by the Board of Studies in Commerce. The Examiner would evaluate the portfolio for a maximum of 35 marks and conduct viva-voce examination for 15 marks. The award lists duly signed are to be sent the Controller of Examinations.

***the student has to collect the various documents prepare activity charts and submit the same in the form of a record.**

SEMESTER – VI

E-COMMERCE

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM605

UNIT-I: INTRODUCTION:

E-Commerce: Meaning - Advantages & Limitations - E-Business: Traditional & Contemporary Model, Impact of E-Commerce on Business Models - Classification of E-Commerce: B2B - B2C - C2B - C2C - B2E - Applications of Ecommerce: E-Commerce Organization Applications - E-Marketing - E-Advertising - E-Banking - Mobile Commerce - E-Trading - E-Learning - E- Shopping.

UNIT-II: FRAMEWORK OF E-COMMERCE:

Framework of E-Commerce: Application Services - Interface Layers - Secure Messaging - Middleware Services and Network Infrastructure - Site Security - Firewalls & Network Security - TCP/IP – HTTP - Secured HTTP – SMTP - SSL.
Data Encryption: Cryptography – Encryption – Decryption - Public Key - Private Key - Digital Signatures - Digital Certificates.

UNIT-III: CONSUMER ORIENTED E-COMMERCE APPLICATIONS:

Introduction - Mercantile Process Model: Consumers Perspective and Merchant's Perspective - Electronic Payment Systems: Legal Issues & Digital Currency - E-Cash & E-Cheque - Electronic Fund Transfer (EFT) - Advantages and Risks - Digital Token-Based E-Payment System - Smart Cards.

UNIT-IV: ELECTRONIC DATA INTERCHANGE:

Introduction - EDI Standards - Types of EDI - EDI Applications in Business – Legal - Security and Privacy issues if EDI - EDI and E-Commerce - EDI Software Implementation.

UNIT-V: E-MARKETING TECHNIQUES:

Introduction - New Age of Information - Based Marketing - Influence on Marketing - Search Engines & Directory Services - Charting the On-Line Marketing Process - Chain Letters - Applications of 5P's (Product, Price, Place, Promotion, People) E-Advertisement - Virtual Reality & Consumer Experience - Role of Digital Marketing.

Lab work: *Using Microsoft Front Page Editor and HTML in Designing a Static Webpage/Website.*

SUGGESTED READINGS:

1. Frontiers of Electronic Commerce: Ravi Kalakota, Andrew B Whinston, Pearson
2. E-Commerce: Tulasi Ram Kandula, HPH.
3. E-Commerce: An Indian Perspective: P.T. Joseph, S.J, PHI
4. Electronic Commerce, Framework Technologies & Applications: Bharat Bhasker, McGraw Hill
5. Introduction To E-Commerce: Jeffrey F Rayport, Bernard J. Jaworski: Tata McGraw Hill
6. Electronic Commerce, A Managers' Guide: Ravi Kalakota, Andrew B Whinston
7. E-Commerce & Computerized Accounting: Rajinder Singh, Er. Kaisar Rasheed, Kalyani
8. E-Commerce & Mobile Commerce Technologies: Pandey, Saurabh Shukla, S. Chand
9. E-Business 2.0, Roadmap For Success: Ravi Kalakota, Marcia Robinson, Pearson
10. Electronic Commerce: Pete Loshin / John Vacca, Firewall Media

SEMESTER – VI

Applicable from the academic year 2016-17 onwards

COURSE CODE : BCOM605

MANAGEMENT INFORMATION SYSTEM

UNIT-I: AN OVERVIEW OF MANAGEMENT INFORMATION SYSTEMS (MIS):

Concept & Definition of MIS - MIS Vs. Data Processing - MIS & Decision Support Systems - MIS & Information Resources Management - End User Computing – MIS Structure - Managerial View of IS – Functions of Management - Management Role - Levels of Management.

UNIT-II: FOUNDATION OF INFORMATION SYSTEMS:

Introduction to Information System in Business - Fundamentals of Information Systems - Solving Business Problems with Information Systems - Types of Information Systems, Effectiveness and Efficiency Criteria in Information System - Frame Work For IS - Sequence of Development of IS.

UNIT-III: CONCEPT OF PLANNING & CONTROL:

Concept of Organizational Planning - Planning Process - Computational Support for Planning - Characteristics of Control Process - Nature of Control in an Organization.
IS Planning – Determination of Information Requirements - Business Systems Planning - End Means Analysis - Organizing the Plan.

UNIT-IV: BUSINESS APPLICATIONS OF INFORMATION TECHNOLOGY:

Internet & Electronic Commerce – Intranet - Extranet & Enterprise Solutions - Information System for Business Operations - Information System for Managerial Decision Support - Information System for Strategic Advantage.

UNIT-V: ADVANCED CONCEPTS IN INFORMATION SYSTEMS:

Enterprise Resource Planning - Supply Chain Management - Customer Relationship Management and Procurement Management - Systems Analysis and Design – System Development Life Cycle – Prototyping – Sad - Project Management - Cost Benefit Analysis - Detailed Design - Implementation.

SUGGESTED READINGS:

1. Management Information System: CVS. Murthy, HPH.
2. Management Information System: O Brian, TMH.
3. Management Information System: Gordon B.Davis & Margrethe H.Olson, TMH.
4. Information System for Modern Management: Murdick, PHI.
5. Management Information System: Jawadekar, TMH.

2019-18

Structure and Organisational Culture.

Organisational Design—Basic Challenges; Differentiation and Intergration Process; Centralization and Decentralization Process; Standardization/Formalization and Mutual Adjustment. Coordinating Formal and Informal Organizations. Mechanistic and Organic Structures.

Designing Organizational structures—Authority and Control; Line and Staff Functions, Specialization and Coordination. Types of Organization Structure—Functional. Matrix Structure, Project Structure. Nature and Basis of Power, Sources of Power, Power Structure and Politics. Impact of Information Technology on Organizational Design and Structure.

Managing Organizational Culture.

2. **Organisation Behaviour :**

Meaning and Concept; Individual in organization: Personality, Theories, and Determinants; Pereception Meaning and Process.

Motivation : Concepts, Theories and Applications. Leadership—Theories and Styles. Quality of Work Life (QWL): Meaning and its impact on Performance, Ways of its Enhancement. Quality Circles (QC)—Meaning and their Importance. Management of Conflicts in Organizations. Transactional Analysis, Organizational Effectiveness, Management of Change.

Human Resources Management and Industrial Relations

1. **Human Resources Management (HRM) :**

Meaning Nature and Scope of HRM, Human Resource Planning, Job Analysis, Job Description, Job Specification, Recruitment Process, Selection Process, Orientational and Placement, Training and Development Process, Performance Appraisal and 360° Feed Back, Salary and Wage Administration, Job Evaluation, Employee Welfare, Promotions, Transfers and Separations.

2. **Industrial Relations (IR) :**

Meaning, Nature, Importance and Scope of IR, Formation of Trade Union, Trade Union Legislation, Trade Union Movement in India. Recognition of Trade Unions, Problems of Trade Unions in India. Impact of Liberalization on Trade Union Movement.

Nature of Industrial Disputes: Strikes and Lockouts, Causes of Disputes, Prevention and Settlement of Disputes.

Worker's Participation in Management: Philosophy, Rationale, Present Day Status and Future Prospects.

Adjudication and Collective Bargaining.

Industrial Relations in Public Enterprises Absenteeism and Labour Turnover in Indian Industries and their Causes and Remedies.

ILO and its Functions.

ECONOMICS

PAPER—I

1. **Advanced Micro Economics :**

(a) Marshallian and Walrasian Approaches to Price determination.

(b) Alternative Distribution Theories : Ricardo, Kaldor, Kalecki.
(c) Markets Structure : Monopolistic Competition, Duopoly, Oligopoly.
(d) Modern Welfare Criteria : Pareto Hicks and Scitovsky, Arrow's Impossibility Theorem, A. K. Sen's Social Welfare Function.

2. **Advance Macro Economics :**

Approaches to Employment Income and Interest Rate determination : Classical, Keynes (IS-LM) curve, Neo-classical synthesis and New classical, Theories of Interest Rate determination and Interest Rate Structure.

3. **Money-Banking and Finance :**

(a) Demand for and Supply of Money : Money Multiplier Quantity Theory of Money (Fisher, Pigou and Friedman) and Keynes' Theory on Demand for Money, Goals and Instruments of Monetary Management in Closed and Open Economies. Relation between the Central Bank and the Treasury. Proposal for ceiling on growth rate of money.
(b) Public Finance and its Role in market Economy : In stabilization of supply, allocation of resources and in distribution and development. Sources of Government revenue, forms of Taxes and Subsidies, their incidence and effects. Limits to taxation, loans, crowding-out effects and limits to borrowings. Public expenditure and its effects.

4. **International Economics :**

(a) Old and New theories of International Trade.
(i) Comparative advantage,
(ii) Terms of Trade and Offer Curve.
(iii) Product Cycle and Strategic Trade Theories.
(iv) Trade as an engine of growth and theories of underdevelopment in an open economy.
(b) Forms of Protection : Tariff and quota.
(c) Balance of Payments Adjustments : Alternative Approaches.
(i) Price versus income, income adjustments under fixed exchange rates.
(ii) Theories of Policy Mix.
(iii) Exchange rate adjustments under capital mobility.
(iv) Floating Rates and their Implications for Developing COUNTRIES: Currency Boards.
(v) Trade Policy and Developing Countries.
(vi) BOP, adjustments and Policy Coordination in open economy macro-model.
(vii) Speculative attacks.
(viii) Trade Blocks and Monetary Unions.
(ix) WTO : TRIMS, TRIPS, Domestic Measures, Different Rounds of WTO talks.

5. **Growth and Development:**

(a) (i) Theories of growth : Harrod's model;
(ii) Lewis model of development with surplus labour.
(iii) Balanced Unbalanced Growth.
(iv) Human Capitals and Economic Growth.
(v) Research and Development and Economic Growth.
(b) Process of Economic Development of less developed countries: Myrdal and Kuznets on economic development and structural change: Role of Agriculture in Economic Development of less developed countries.
(c) Economic Development and International Trade and Investment, Role of Multinationals.
(d) Planning and Economic Development: changing role of Markets and Planning, Private-Public

Partnership.

(e) Welfare indicators and measures of growth—Human Development Indices. The basic needs approach.

(f) Development and Environmental Sustainability—Renewable and Non Renewable Resources, Environmental Degradation, Intergenerational equity development.

PAPER-II

Indian Economy in Pre-Independence Era :

Land System and its changes, Commercialization of agriculture Drain theory, Laissez faire theory and critique. Manufacture and Transport: Jute, Cotton, Railways, Money and Credit.

Indian Economy after Independence :

A. The Pre-Liberalization Era :

(i) Contribution of Vakil, Gadgil and V.K.R.V. Rao.

(ii) Agriculture: Land Reforms and land tenure system, Green Revolution and capital formation in agriculture.

(iii) Industry Trends in composition and growth, Role of public and private sector, Small scale and cottage industries.

(iv) National and Per capita income : patterns, trends, aggregate and Sectoral composition and changes therein.

(v) Broad factors determining National Income and distribution, Measures of poverty, Trends in poverty and inequality.

B. The Post Liberalization Era :

(i) New Economic Reform and Agriculture: Agriculture and WTO, Food processing, subsidies, Agricultural prices and public distribution system, Impact of public expenditure on agricultural growth.

(ii) New Economic Policy and Industry: Strategy of industrialization, Privatization, Disinvestments, Role of foreign direct investment and multinationals.

(iii) New Economic Policy and Trade: Intellectual property rights : Implications of TRIPS, TRIMS, GATS and new EXIM policy.

(iv) New Exchange Rate Regime: Partial and full convertibility, Capital account convertibility.

(v) New Economic Policy and Public Finance : Fiscal Responsibility Act, Twelfth Finance Commission and Fiscal Federalism and Fiscal Consolidation.

(vi) New Economic Policy and Monetary system. Role of RBI under the new regime.

(vii) Planning: From central Planning to indicative planning, Relation between planning and markets for growth and decentralized planning: 73rd and 74th Constitutional amendments.

(viii) New Economic Policy and Employment: Employment and poverty, Rural wages, Employment Generation, Poverty alleviation schemes, New Rural, Employment Guarantee Scheme.

ELECTRICAL ENGINEERING

PAPER-I

1. Circuits—Theory :

Circuit components; network graphs; KCL, KVL; Circuit analysis methods : nodal analysis, mesh

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DEPARMENT OF ECONOMICS

B.A. II YEAR, ECONOMICS, CHOICE BASED CREDIT SYSTEM SYLLABUS (2017-2018)

SEMESTER-III, MICRO ECONOMICS – II,Discipline Specific Course – Paper – III

Course Title: Micro Economics-II
Nature of Course: Core
Number of Credits: 4

Total Hours: 90

Module I: Types of Revenue and Objectives of Firm **21hrs**

Behaviour of the Firm. Concept of Revenue: Total Revenue (TR), Average Revenue (AR) and Marginal Revenue (MR). Relationship between AR and MR, the Elasticity of Market Demand. Traditional Objectives of the Firm: Profit Maximization. Modern Objectives of the Firm: Output/Sales/Market share Maximization.

Module II: Perfect Competition and monopoly **17hrs**

Classification of Market.Perfect Competition, Short Run and Long Run Analysis.Equilibrium of Firm and Industry.Monopoly Features, Equilibrium. Discriminatory Pricing.Differences between Perfect Competition and Monopoly.

Module III: Monopolistic Competition and Oligopoly Market **15hrs**

Monopolistic Competition. Product Differentiation, Selling costs. Oligopoly: Homogenous and Heterogeneous Oligopoly, Price Rigidity in Oligopoly. Kinky Demand Curve.

Module IV: Pricing Strategies **18hrs**

Pricing Practices: Cost Plus Pricing. Marginal Cost Pricing, Rate of Return Pricing, Product Line Pricing. Price Skimming. Penetration Pricing, Mark-upPricing. State Intervention and Administered Prices.

Module V: Distribution and Factor Pricing **19hrs**

Functional and Personal Distribution. Marginal Productivity Theory of Distribution. Ricardo's Theory of Rent.Quasi Rent.Theories of Wages.Theories of Profit. Risk and Uncertainty.

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Osmania University Hyd-07.

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B.A. II YEAR, ECONOMICS, CHOICE BASED CREDIT SYSTEM SYLLABUS (2017-2018)

SEMESTER-IV, BASICS OF COMPUTERS – II, Skill Enhancement Course – Paper – II

2Hours per week

Module –I: Data Processing Techniques using MS Excel

Concept of Data – Record and File – Types of Data – Data Entry – File handling and Operations like Opening, appending and cascading – Closing and attribute controls – Data Storage and Retrieval – Data Operations – Preparation and Formatting of Text, Tables and Graphs – MS-Access: Creating, Opening. – MS-Power Point: Concept of Presentation – Creating, opening and saving the slide shows – Animation – viewer's Presentation.

Module –II: Internet Applications

Definition and uses of Internet – Salient Features – Different Types of web sites – Creation of Electronic Mail address – Sending and getting e-mails – Features of Inbox – Attaching Images or Documents to E-mail – Downloading E-mail – Attachments of Documents from the Internet.

References:

1. Sinha, P.K. : Computer Fundamentals, BPB Publications, New Delhi.
2. Raja Raman, V. : Fundamentals of Computers, PHI, New Delhi.
3. Kerns : Essentials of Microdoft Windows, Word and Excl, PHI.
4. Alexis Leon & Mathews Leon : Introduction to Computers with MS – Office, TMH.
5. Asthana&BrajBhushan : Statistics for Social Sciences (with SPSS Applications), PHI

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DEPARMENT OF ECONOMICS

B.A. II YEAR, ECONOMICS, CHOICE BASED CREDIT SYSTEM SYLLABUS (2017-2018)

SEMESTER-IV, PUBLIC ECONOMICS, Discipline Specific Course – Paper – IV

Course Title: Public Economics
Nature of Course: Core
Number of Credits: 4

Total Hours: 90

Module I: Introduction **15hrs**

Meaning and importance of Public Finance-Evolution of Public Finance. Multiple theory of public household-Public and Private goods-Markets mechanism in public and private goods. State as an agent of planning and development.

Module II: Public Expenditure **15hrs**

Theories of public expenditure-Wagner's Law of increasing state activities- Peacock Wiseman's hypothesis- Principle of Maximum Social Advantages- Growth and Pattern of Public Expenditure, Effects of public expenditure.

Module III: Taxation and Public Debt **17hrs**

Theories of taxation-Benefit approach, Ability to pay approach and Neutrality approach- public debt- Internal and External debt, Consequences of External debt, Debt Redemption Methods.

Module IV: Fiscal Policy and Federal Finance **23hrs**

Definition of fiscal policy and its objectives; Fiscal Policies for redistribution of income and wealth and stabilization-Fiscal policies in a developing country, federal financial structure and its main features-Direct taxes-Income tax-Corporate tax. Indirect tax structure-Union excise duties, customs duties, sales tax-VAT and GST Centre-State financial Relations.

Module V: Budget **20hrs**

Budget – Classification of budgets- Economic, Functional, Organisational, Classifications of budgets- performance of programming and zero based budgets- surplus, balanced and deficit budget- concepts of budget deficit and their implications- State and Central budgets (Current Budget). Fiscal crisis and Fiscal sector reforms in India; Current Finance Commission recommendations.

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Generation and crystallisation of magmas. Crystallisation of albite—anorthite, diopside—anorthite and diopside—wollastonite—silica systems. Bowen's Reaction Principle; Magmatic differentiation and assimilation. Petrogenetic significance of the textures and structures of igneous rocks. Petrography and petrogenesis of granite, syenite, diorite, basic and ultrabasic groups, charnockite, anorthosite and alkaline rocks. Carbonatites. Deccan volcanic province.

Types and agents of metamorphism. Metamorphic grades and zones; Phase rule. Facies of regional and contact metamorphism; ACF and AKF diagrams; Textures and structures of metamorphic rocks. Metamorphism of arenaceous, argillaceous and basic rocks; Minerals assemblages. Retrograde metamorphism; Metasomatism and granitisation, migmatites. Granulite terrains of India.

3. **Sedimenary Petrology :**

Sedimentas and Sedimentary rocks: Processes of formation; digenesis and lithification; Clastic and non-clastic rocks-their classification, petrography and depositional environment; Sedimentary facies and provenance. Sedimentary structures and their significance. Heavy minerals and their significance. Sedimentary basins of India.

4. **Economic Geology :**

Ore, ore mineral and gangue, tenor of ore. Classification of ore deposits; Processes of formation of mineral deposits; Controls of ore localisation; Ore texures and structures; Metallogenic epochs and provinces; Geology of the important Indian deposits of aluminium, chromium, copper, gold, iron, lead, zinc, manganese, titanium, uranium and thorium and industrial minerals; Deposits of coal and petroleum in India, National Mineral Policy; Conservation and utilization of mineral resources. Marine mineral resources and Law of Sea.

5. **Mining Geology :**

Methods of prospecting—geological, geophysical, geochemical and geobotanical; Techniques of sampling. Estimation of reserves of ore; Methods of exploration and mining-metallic ores, industrial minerals, marine mineral resources and building stones. Mineral beneficiation and ore dressing.

6. **Geochemistry and Environmental Geology :**

Cosmic abundance of elements. Composition of the planets and meteorites. Structure and composition of earth and distribution of elements. Trace elements. Elements of crystal chemistry-types of chemical bonds, coordination number. Isomorphism and polymorphism. Elementary thermodynamics.

Natural hazards—floods, mass wasting, costal hazards, earthquakes and volcanic activity and mitigation; Environmental impact of urbanization, mining, industrial and radioactive waste disposal, use of fertilizers, dumping of mine waste and fly-ash. Pollution of ground and surface water, marine pollution. Environment protection—legislative measures in India; Sea level changes: causes and impact.

HISTORY

PAPER I

1. **Sources**

Archaeological sources :

Exploration, excavation, epigraphy, numismatics, monuments.

Literary sources:

Indigenous: Primary and secondary; poetry, scientific literature, literature, literature in regional languages, religious literature.

Foreign account: Greek, Chinese and Arab writers.

2. Pre-history and Proto-history :

Geographical factors; hunting and gathering (paleolithic and mesolithic); Beginning of agriculture (neolithic and chalcolithic).

3. Indus Valley Civilization :

Origin, date, extent, characteristics-decline, survival and significance, art and architecture.

4. Megalithic Cultures :

Distribution of pastoral and farming cultures outside the Indus, Development of community life, Settlements, Development of agriculture, Crafts, Pottery, and Iron industry.

5. Aryans and Vedic Period :

Expansions of Aryans in India :

Vedic Period: Religious and philosophic literature; Transformation from Rig Vedic period to the later Vedic period; Political, social and economical life; Significance of the Vedic Age; Evolution of Monarchy and Varna system.

6. Period of Mahajanapadas :

Formation of States (Mahajanapada): Republics and monarchies; Rise of urban centres; Trade routes; Economic growth; Introduction of coinage; Spread of Jainism and Buddism; Rise of Magadha and Nandas.

Iranian and Mecedonian invasions and their impact.

7. Mauryan Empire :

Foundation of the Mauryan Empire, Chandragupta, Kautilya and Arthashastra; Ashoka; Concept of Dharma; Edicts; Polity, Administration, Economy; Art, architecture and sculpture; External contacts; Religion; Spread of religion; Literature.

Disintegration of the empire; sungas and Kanvas.

8. Post-Mauryan Period (Indo-Greeks, Sakas, Kushanas, Western Kshatrapas) :

Contact with outside world; growth of urban centres, economy, coinage, development of religions, Mahayana, social conditions, art, architecture, culture, literature and science.

9. Early State and Society in Eastern India, Deccan and South India:

Kharavela, The Satavahanas, Tamil States of the Sangam Age; Administration, Economy, land grants, coinage, trade guilds and urban centres; Buddhist centres; Sangam literature and culture; Art and architecture.

10. Guptas, Vakatakas and Vardhanas:

Polity and administration, Economic conditions, Coinage of the Guptas, Land grants, Decline of urban centres, Indian feudalism, Caste system, Position of women, Education and educational

institutions; Nalanda, Vikramshila and Vallabhi, Literature, scientific literature, art and architecture.

11. Regional States during Gupta Era:

The Kadambas, Pallavas, Chalukyas of Badami; Polity and Administration, Trade guilds, Literature; growth of Vaishnava and Saiva religions. Tamil Bhakit movement, Shankaracharya; Vedanta; Institutions of temple and temple architecture; Palas, Senas, Rashtrakutas, Paramaras, Polity and administration; Cultural aspects. Arab conquest of Sind; Alberuni, The Chaluky as of Kalyana, Cholas, Hoysalas, Pandyas; Polity and Administration; Local Government; Growth of art and architecture, religious sects, Institution of temple and Mathas, Agraharas, education and literature, economy and society.

12. Themes in Early Indian Cultural History:

Languages and texts, major stages in the evolution of art and architecture, major philosophical thinkers and schools, ideas in Science and Mathematics.

13. Early Medieval India, 750-1200:

- Polity: Major political developments in Northern India and the peninsula, origin and the rise of Rajputs.
- The Cholas: administration, village economy and society "Indian Feudalism".
- Agrarian economy and urban settlements.
- Trade and commerce.
- Society: the status of the Brahman and the new social order.
- Condition of women.
- Indian science and technology.

14. Cultural Traditions in India, 750-1200:

- Philosophy: Skankaracharya and Vedanta, Ramanuja and Vishishtadvaita, Madhva and Brahma-Mimansa.
- Religion: Forms and features of religion, Tamil devotional cult, growth of Bhakti, Islam and its arrival in India, Sufism.
- Literature: Literature in Sanskrit, growth of Tamil literature, literature in the newly developing languages, Kalhan's Rajtarangini, Alberuni's India.
- Art and Architecture: Temple architecture, sculpture, painting.

15. The Thirteenth Century:

- Establishment of the Delhi Sultanate: The Ghurian invasions - factors behind Ghurian success.
- Economic, Social and cultural consequences.
- Foundation of Delhi Sultanate and early Turkish Sultans.
- Consolidation: The rule of Iltutmish and Balban.

16. The Fourteenth Century:

- "The Khalji Revolution".

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

— Alauddin Khalji: Conquests and territorial expansion, agrarian and economic measure.

— Muhammad Tughluq: Major projects, agrarian measures, bureaucracy of Muhammad Tughluq.

— Firuz Tugluq: Agrarian measures, achievements in civil engineering and public works, decline of the Sultanate, foreign contacts and Ibn Battuta's account.

17. Society, Culture and Economy in the Thirteenth and Fourteenth Centuries:

— Society: composition of rural society, ruling classes, town dwellers, women, religious classes, caste and slavery under the Sultanate, Bhakti movement, Sufi movement.

— Culture: Persian literature, literature in the regional languages of North India, literaute in the languages of South India, Sultanate architecture and new structural forms, painting, evolution of a composite culture.

— Economy: Agricultural Production, rise of urban economy and non-agricultural production, trade and commerce.

18. The Fifteenth and Early Sixteenth Century-Political Developments and Economy:

— Rise of Provincial Dynasties : Bengal, Kashmir (Zainul Abedin), Gujarat.

— Malwa, Bahmanids.

— The Vijayanagara Empire.

— Lodis.

— Mughal Empire, first phase : Babur, Humayun.

— The Sur Empire : Sher Shah's administration.

— Portuguese colonial enterprise, Bhakti and Sufi Movements.

19. The Fifteenth and Early Sixteenth Century- Society and culture:

— Regional cultures specificities.

— Literary traditions.

— Provincial architectural.

— Society, culture, literature and the arts in Vijayanagara Empire.

20. Akbar:

— Conquests and consolidation of empire.

— Establishment of *jagir* and *mansab* systems.

— Rajput policy.

— Evolution of religious and social outlook. Theory of *Sulh-i-kul* and religious policy.

— Court patronage of art and technology.

21. Mughal Empire in the Seventeenth Century:

— Major administrative policies of Jahangir, Shahjahan and Aurangzeb.

— The Empire and the Zamindars.

— Religious policies of Jahangir, Shahjahan and Aurangzeb.

— Nature of the Mughal State.

— Late Seventeenth Century crisis and the revolts.

— The Ahom kingdom.

— Shivaji and the early Maratha Kingdom.

22. Economy and society, in the 16th and 17th Centuries:

— Population Agricultural and craft production.

— Towns, commerce with Europe through Dutch, English and French companies : a trade revolution.

— Indian mercantile classes. Banking, insurance and credit systems.

— Conditions of peasants, Condition of Women.

— Evolution of the Sikh community and the Khalsa Panth.

23. Culture during Mughal Empire:

— Persian histories and other literature.

— Hindi and religious literatures.

— Mughal architecture.

— Mughal painting.

— Provincial architecture and painting.

— Classical music.

— Science and technology.

24. The Eighteenth Century:

— Factors for the decline of the Mughal Empire.

— The regional principalities: Nizam's Deccan, Bengal, Awadh.

— Maratha ascendancy under the Peshwas.

— The Maratha fiscal and financial system.

— Emergence of Afghan power Battle of Panipat, 1761.

— State of, political, cultural and economic, on eve of the British conquest.

PAPER-II

1. European Penetration into India:

The Early European Settlements; The Portuguese and the Dutch; The English and the French East India Companies; Their struggle for supremacy; Carnatic Wars; Bengal-The conflict between the English and the Nawabs of Bengal; Siraj and the English; The Battle of Plassey; Significance of Plassey.

2. British Expansion in India:

Bengal-Mir Jafar and Mir Kasim; The Battle of Buxar; Mysore; The Marathas; The three Anglo-Maratha Wars; The Punjab.

3. Early Structure of the British Raj:

The Early administrative structure; From diarchy to direct contol; The Regulating Act (1773); The Pitt's India Act (1784); The Charter Act (1833); The Voice of free trade and the changing character of British colonial rule; The English utilitarian and India.

4. Economic Impact of British Colonial Rule:

(a) Land revenue settlements in British India; The Permanent Settlement; Ryotwari Settlement; Mahalwari Settlement; Economic impact of the revenue arrangements; Commercialization of agriculture; Rise of landless agrarian labourers; Impoverishment of the rural society.

(b) Dislocation of traditional trade and commerce; De-industrialisation; Decline of traditional crafts; Drain of wealth; Economic transformation of India; Railroad and communication network including telegraph and postal services; Famine and poverty in the rural interior; European business enterprise and its limitations.

5. Social and Cultural Developments:

The state of indigenous education, its dislocation; Orientalist-Anglicist controversy, The introduction of western education in India; The rise of press, literature and public opinion; The rise of modern vernacular literature; Progress of Science; Christian missionary activities in India.

6. Social and Religious Reform Movements in Bengal and Other Areas:

Ram Mohan Roy, The Brahmo Movement; Devendranath Tagore; Iswarchandra Vidyasagar; The Young Bengal Movement; Dayanada Saraswati; The social reform movements in India including Sati, widow remarriage, child marriage etc.; The contribution of Indian renaissance to the growth of modern India; Islamic revivalism-the Feraizi and Wahabi Movements.

7. Indian Response to British Rule:

Peasant movement and tribal uprisings in the 18th and 19th centuries including the Rangpur Dhing (1783), the Kol Rebellion (1832), the Mopla Rebellion in Malabar (1841-1920), the Santal Hul (1855), Indigo Rebellion (1859-60), Deccan Uprising (1875) and the Munda Ulgulan (1899-1900); The Great Revolt of 1857 —Origin, character, casuses of failure, the consequences; The shift in the character of peasant uprisings in the post-1857 period; the peasant movements of the 1920s and 1930s.

8. Factors leading to the birth of Indian Nationalism; Politics of Association; The Foundation of the Indian National Congress; The Safety-valve thesis relating to the birth of the Congress; Programme and objectives of Early Congress; the social composition of early Congress leadership; the Moderates and Extremists; The Partition of Bengal (1905); The Swadeshi Movement in Bengal; the economic and political aspects of Swadeshi Movement; The beginning of revolutionary extremism in India.

9. Rise of Gandhi; Character of Gandhian nationalism; Gandhi's popular appeal; Rowlatt Satyagraha; the Khilafat Movement; the Non-cooperation Movement; National politics from the end of the Non-cooperation movement to the beginning of the Civil Disobedience Movement; the two phases of the Civil Disobedience Movement; Simon Commission; The Nehru Report; the Round Table Conferences; Nationalism and the Peasant Movements; Nationalism and Working class movements; Women and Indian youth and students in Indian politics (1885-1947); the election of 1937 and the formation of ministries; Cripps Mission; the Quit India Movement; the Wavell Plan; The Cabinet Mission.

10. Constitutional Developments in the Colonial India between 1858 and 1935.
11. Other strands in the National Movement.

    The Revolutionaries: Bengal, the Punjab, Maharashtra, U.P. the Madras Presidency, Outside India.

    The Left; The Left within the Congress: Jawaharlal Nehru, Subhas Chandra Bose, the Congress Socialist Party; the Communist Party of India, other left parties.
12. Politics of Separatism; the Muslim League; the Hindu Mahasabha; Communalism and the politics of partition; Transfer of power; Independence.
13. Consolidation as a Nation; Nehru's Foreign Policy; India and her neighbours (1947-1964); The linguistic reorganisation of States (1935-1947); Regionalism and regional inequality; Integration of Princely States; Princes in electoral politics; the Question of National Language.
14. Caste and Ethnicity after 1947; Backward Castes and Tribes in post-colonial electoral politics; Dalit movements.
15. Economic development and political change; Land reforms; the politics of planning and rural reconstruction; Ecology and environmental policy in post-colonial India; Progress of Science.
16. **Enlightenment and Modern ideas:**

(i) Major Ideas of Enlightenment : Kant, Rousseau.

(ii) Spread of Enlightenment in the colonies.

(iii) Rise of socialist ideas (up to Marx); spread of Marxian Socialism.

17. **Origins of Modern Politics :**

(i) European States System.

(ii) American Revolution and the Constitution.

(iii) French Revolution and Aftermath, 1789-1815.

(iv) American Civil War with reference to Abraham Lincoln and the abolition of slavery.

(v) British Democratic politics, 1815-1850 : Parliamentary Reformers, Free Traders, Chartists.

18. **Industrialization :**

(i) English Industrial Revolution : Causes and Impact on Society.

(ii) Industrialization in other countries : USA, Germany, Russia, Japan.

(iii) Industrialization and Globalization.

19. **Nation-State System :**

(i) Rise of Nationalism in 19th century.

(ii) Nationalism : State-building in Germany and Italy.

(iii) Disintegration of Empires in the face of the emergence of nationalities across the World.

20. **Imperialism and Colonialism :**

(i) South and South-East Asia.

(ii) Latin America and South Africa.

(iii) Australia.

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

(iv) Imperialism and free trade: Rise of neo-imperialism.

21. Revolution and Counter-Revolution :

(i) 19th Century European revolutions.

(ii) The Russian Revolution of 1917-1921.

(iii) Fascist Counter-Revolution, Italy and Germany.

(iv) The Chinese Revolution of 1949.

22. World Wars :

(i) 1st and 2nd World Wars as Total Wars : Societal implications.

(ii) World War I : Causes and Consequences.

(iii) World War II : Causes and Consequences.

23. The World after World War II:

(i) Emergence of Two power blocs.

(ii) Emergence of Third World and non-alignment.

(iii) UNO and the global disputes.

24 . Liberation from Colonial Rule :

(i) Latin America-Bolivar.

(ii) Arab World-Egypt.

(iii) Africa-Apartheid to Democracy.

(iv)South-East Asia-Vietnam.

25. Decolonization and Underdevelopment :

(i) Factors constraining Development ; Latin America, Africa.

26. Unification of Europe :

(i) Post War Foundations ; NATO and European Community.

(ii) Consolidation and Expansion of European Community

(iii) European Union.

27. Disintegration of Soviet Union and the Rise of the Unipolar World :

(i) Factors leading to the collapse of Soviet Communism and Soviet Union, 1985-1991.

(ii) Political Changes in East Europe 1989-2001.

(iii) End of the Cold War and US Ascendancy in the World as the lone superpower.

LAW

PAPER-I

Constitutional and administrative Law :

1. Constitution and Constitutionalism:The distinctive features of the Constitution.
2. Fundamental Rights—Public interest litigation; Legal Aid; Legal services authority.

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DEPARTMENT OF HISTORY

SEMESTER – I/ MODULE – I (5 Credits)

HISTORY OF INDIA (From Earliest Times to c.700 CE)

SYLLABUS

Max. 90 HRS

Module-I **20 HRS**

Definitions - Nature and Scope of History - History and Its Relationship with other Social Sciences - Geographical Features of India – Sources of Indian History: Pre-History – Paleolithic, Mesolithic, Neolithic, Chalcolithic and Megalithic Cultures.

Module-II **15 HRS**

Indus Valley Civilization - Its Features & Decline; Early Vedic and Later Vedic Civilizations – Vedic Literature – Society – Economy - Polity – Religion.

Module-III **20 HRS**

Rise of New Religious Movements – Charvakas, Lokayathas, Jainism and Buddhism; Mahajanapadas - Rise of Magadha; Alexander's Invasion and Its Impact.

Module-IV **20 HRS**

Foundation of the Mauryan Dynasty; Ashoka and His Dharma – Polity – Administration - Society – Economy – Religion – Literature - Art and Architecture; Disintegration of the Mauryan Empire; Post-Mauryan Kingdoms - Indo-Greeks - Kushanas and Kanishka - Society – Economy – Literature – Art and Architecture; The Satavahanas; Sangam Age – Literary Development.

Module-V **15 HRS**

Gupta Empire: A Brief Political Survey - Polity and Administration, Social and Economic Conditions, Agriculture and Land Grants - Feudalism, Caste System, Position of Women, Education, Literature, Science and Technology, Art and Architecture - Harshavardana and His Achievements.

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DEPARTMENT OF HISTORY

SEMESTER – II/ MODULE – II (5 Credits)

HISTORY OF INDIA (c.700-1526 CE) – II

SYLLABUS

Max. 90 HRS

Module-I **20 HRS**

Rise of Regional States: Pallavas, Chalukyas of Badami, Rashtrakutas, Cholas; Local Self Government under Cholas; Society, Economy, Literature, Art and Architecture; Bhakti Movement in South India: Shaiva Nayanars and Vaishnava Alwars.

Module-II **15 HRS**

Arab Conquest of Sind, Ghaznavids and Ghoris; Foundation of Delhi Sultanate: Slave, Khaljis, Tughlaqs, Sayyids and Lodis – Polity, Administration, Society and Economy - Art and Architecture - Growth of Education and Literature – Religious Conditions.

Module-III **20 HRS**

Bhakti and Sufi Movements and their Impact on Society and Culture – Emergence of Composite Culture.

Module-IV **20 HRS**

Kakatiyas – Polity – Administration - Society and Economy - Literature and Religion – Art and Architecture – Yadavas – Hoysalas and Pandyas – Brief History.

Module-V **15 HRS**

Vijayanagara – Polity – Administration - Society and Economy – Religion – Art and Architecture – Language and Literature – Bahamanis and their Contribution to the Deccan Culture.

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DEPARTMENT OF HISTORY 2017-18
SEMESTER – IV/Paper - II

ARCHIVES AND MUSEUMS

Skill Enhancement Course (SEC) – SYLLABUS

Max. 15 Hrs

Module – I: **7 Hrs**

Definition of Archives – Scope – Types of Archives – Development of Archives – National and State Archives in India – Archives – Understanding the Traditions of Preservation – Collection – Purchase – Documentation: Accessioning – Indexing – Cataloguing – Digital Documentation and De-accessioning – Chemical Preservation and Restoration.

Module – II: **8 Hrs**

Definition of Museum – Introduction – Scope – Types of Museums – Significance of Museums – Museums in India – Museums – Collection – Field Exploration – Excavation – Purchase – Gift and Exchanges – Treasure Trove – Documentation – Indexing – Museum Preservation and Exhibition – Outreach Activities of Museums and Archives.

Recommended Books:

[1]. Saloni Mathur, India by Design : *Colonial History and Cultural Display*, University of California, 2007.

[2]. Sengupta, S., *Experiencing History through Archives*, Munshiram Manoharlal, Delhi, 2004.

[3]. Guha Thakurta, Tapati, *Monuments, Objects, Histories : Institutions of Art in Colonial and Post – Colonial India*, New York, 2004.

[4]. Kathpalia, Y.P., *Conservation and Restoration of Archive Materials*, UNESCO, 1973.

(2) Kambaramayanam : Kumbakarunan Vadhai Padalam.

Part 3 : Devotional Literature

(1) Tiruvasagam : Neetthal Vinnappam

(2) Tiruppavai : (Full Text).

Section B

Modern Literature

Part 1 : Poetry

(1) Bharathiar : Kannan Pattu

(2) Bharathidasan : Kudumba Vilakku

(3) Naa. Kamarasan : Karappu Malarkal

Prose

(1) Mu. Varadharajanar : Aramum Arasiyalum

(2) C. N. Annadurai : Ye! Thazhntha Tamilagame.

Part 2 : Novel, Short Story and Drama

(1) Akilon ; Chittairappavai

(2) Jayakanthan : Gurupeedam

(3) Cho : Yaurkkum Vetkamillai

Part 3 : Folk Literature

(1) Muthuppattan kathai Edited by Na. Vanamamalai, (Publication : Madurai Kamaraj University).

(2) Malaiyaruvi, Edited by Ki. Va Jagannathan (Publication : Saraswathi Mahal, Thanjavur).

TELUGU

PAPER I

Answer must be written in Telugu

Section A : Language

1. Place of Telugu among Dravidian languages and its antiquity—Etymological History of Telugu,Tenugu and Andhra.
2. Major linguistic changes in phonological, morphological, grammatical and syntactical levels, from Proto-Dravidian to old Telugu and from old Telugu to Modern Telugu.
3. Evolution of spoken Telugu when compared to classical Telugu-Formal and functional view of Telugu
   language.
4. Influence of other languages and its impact on Telugu.
5. Modernization of Telugu language :
   (a) Linguistic and literary movements and their role in modernization of Telugu.
   (b) Role of media in modernization of Telugu (News-papers, Radio, TV etc.)
   (c) Problems of terminology and mechanisms in coining new terms in Telugu in various

discourses including scientific and technical.

6. Dialects of Telugu—Regional and social variations and problems of Standardization.
7. Syntax—Major divisions of Telugu sentences—simple, complex and compound sentences—Noun and verb predications—Processes of nominalization and relativization—Direct and indirect reporting-conversion processes.
8. Translation—Problems of translation, cultural, social and idiomatic—Methods of translation—Approaches to translation—Literary and other kinds of translation—Various uses of translation.

Section B : Literature

1. Literature in Pre-Nannaya Period—Marga and Desi poetry.
2. Nannaya Period—Historical and literary background of Andhra Mahabharata.
3. Saiva poets and their contribution—Dwipada, Sataka, Ragada, Udaharana.
4. Tikkana and his place in Telugu literature.
5. Errana and his literary works—Nachana Somana and his new approach to poetry.
6. Srinatha and Potana—Their works and contribution.
7. Bhakti poets in Telugu literature—Tallapaka Annamayya, ramadasu, tyagayya.
8. Evolution of prabandhas—Kavya and prabandha.
9. Southern school of Telugu literature-raghunatha Nayaka, chemakura vankatakavi and women poets-Literary forms like yakshagana, prose and padakavita.
10. Modern Telugu Literature and literary forms—Novel, Short Story, Drama, Playlet and poetic forms.
11. Literary Movements : Reformation, Nationalism, Neo-classisicism, Romanticism and Progressive, Revolutionary movements.
12. Digambarakavulu, feminist and dalit Literature.
13. Main divisions of folk literature—Performing folk arts.

PAPER II

Answer must be written in Telugu

This paper will require first hand reading of the prescribed texts and will be designed to test the candidate's critical ability, which will be in relation to the following approaches :—

(i) Aesthetic approach—Rassa, Dhawani, Vakroti and Auchitya—Formal and Structural-Imagery and Symbolism.

(ii) Sociological, Historical, Ideological, Psychological approaches.

Section A

1. Nannaya-Dushyanta Chritra (Adiparva 4th Canto verses 5—109).
2. Tikkana-Sri Krishna Rayabaramu (Udyoga parva-3rd Canto verses 1—144).
3. Srinath-Guna Nidhi Katha (Kasikhandam, 4th Canto, verses 76—133).

4. Pingali Surana-sugatri Salinulakatha (Kalapurno-dayamu 4 Canto verses, 60—142).
5. Molla-Ramayanamu (Balakanda including avatarika).
6. Kasula Purushothama Kavi—Andhra Nayaka Satakamu.

Section B

7. Gurajada Appa Rao—Animutyalu (Short stories).
8. Viswanatha Satyanarayana—Andhra prasasti.
9. Devulapalli Krishna Sastry—Krishnapaksham (excluding Uravsi and Pravasam).
10. Sri Sri-Maha prastanam.
11. Jashuva-Gabbilam (Part I).
12. C. Narayana Reddy—Karpuravasanta rayalu.
13. Kanuparti Varalakshmamma—Sarada lekhalu (Part I).
14. Atreya—N.G.O.
15. Racha Konda Viswanatha Sastry—Alpajaeevi.

URDU

PAPER I

Answer must be written in Urdu

Section A

Development of Urdu Language

(a) Development of Indo-Aryan
  (i) Old Indo-Aryan
  (ii) Middle Indo-Aryan
  (iii) New Indo-Aryan.

(b) Western Hindi and its dialects Brij Bhasha Khadi Boli, Haryanavi, Kannauji, Bundeli—Theories about the origin of Urdu language.

(c) Dakhani Urdu—origin and development, its significant linguistic features.

(d) Social and Cultural roots of Urdu language— and its distinctive features.

Script, Phonology, Morphology, Vocabulary.

Section B

(a) Genres and their development :
  (i) Poetry: Ghazal, Masnavi, Qasida, Marsia, Rubai Jadid Nazm.
  (ii) Prose : Novel, Short Story, Dastan, Drama, Inshaiya, Khutoot, Biography.

(b) Significant feaures of : (i) Deccani, Delhi and Lucknow schools, (ii) Sir Syed movement, Romantic movement, Progressive movement, Modernism.

(c) Literary Criticism and its development with reference to Hali, Shibli, Kaleemuddin Ahmad,

పాఠ్యప్రణాళిక :: 2017-18 :: మొదటి సంవత్సరం

మొదటి-సెమిస్టర్

I. 1. శకుంతలోపాఖ్యానం

2. సుభాషితములు

II. 3. కాసులు

4. 'ప్ర'పంచ పదులు

III. 5. మామిడిపండు

IV. 6. వ్యాకరణం

సంధులు, సమాసాలు

సంధులు: సవర్ణదీర్ఘసంధి

గుణ సంధి

వృద్ధి సంధి

యణాదేశ సంధి
తర్కికసంధి

గసడదవాదేశ సంధి

సమాసాలు: షష్ఠీ తత్పురుష

రూపకం

సంభావనా పూర్వపద కర్మధారయం

బహువ్రీహి

ద్వంద్వం

ద్విగు

రెండవ సెమిస్టర్

I. 1. గొడగూచి కథ

2. హనుమత్ సందేశము

II. 3. జయభేరి

4. అంతర్నాదము

III. 5. ఎంకన్న

IV. 6. రుద్రమదేవి

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మూడవ సెమిస్టర్

I. 1. ధర్మజుని వాక్చాతుర్యం

2. గుణనిధి కథ

II. 3. దేవరకొండ దుర్గం

4. గురుదక్షిణ

III. 5. సి.పి. బ్రౌన్ సాహిత్య సేవ

IV. 6. ఛందస్సు - అలంకారాలు

ఉత్పలమాల	ఉపమ
చంపకమాల	శ్లేష
ఆటవెలది	అర్థాంతరన్యాసం
తేటగీతి	వ్యాజస్తుతి

నాల్గవ సెమిస్టర్

I. 1. నారదుని గాన మాత్సర్యం

2. నారసింహ శతకం

II. 3. నరుడ నేను నరుడ నేను

4. ఆర్తగీతం

III. 5. కొండమల్లెలు

6. చలిచీమలు

2017-18

(Novelist)		Pavittar Papi
		Ek Mian Do Talwaran
(c) Gurbaksh Singh		Zindagi-di-Ras
(Essayist)		Nawan Shivala
		Merian Abhul Yadaan.
Balraj Sahni		Mera Roosi Safarnama
(Travelogue)		Mera Pakistani Safarnama
(d) Balwant Gargi		Loha Kutt
(Dramatist)		Dhuni-di-Agg
		Sultan Razia
Sant Singh Sekhon		Sahityarth
(Critic)		Parsidh Punjabi Kavi
		Punjabi Kav Shiromani.

SANSKRIT

PAPER-I

There will be three questions as indicated in the Question Paper which must be answered in Sanskrit. The Remaining questions must be answered either in Sanskrit or in the medium of examination opted by the candidate.

Section A

1. Significant features of the grammar, with particular stress on Sanjna, Sandhi, Karaka, Samasa, Kartari and Karmani vacyas (voice usages) (to be answered in Sanskrit).

2.(a) Main characteristics of Vedic Sanskrit language

(b) Prominent feature of classical Sanskrit language

(c) Contribution of Sanskrit to linguistic studies

3. General Knowledge of :—

(a) Literary history of Sanskrit

(b) Principal trends of literary criticism

(c) Ramayana

(d) Mahabharata

(e) The origin and development of literary geners of :

Mahakavya

Rupaka (drama)

Katha

Akhyayika

Campu

Khandakavya

Muktaka Kavya.

Section B

4. Essential of Indian Culture with stress on :

(a) Purusārthas
(b) Samskāras
(c) Varnāsramavyavasthā
(d) Arts and fine arts
(e) Technical Sciences.

5. Trends of Indian Philosophy
(a) Mïmansā
(b) Vedānta
(c) Nyaya
(d) Vaisesika
(e) Sānkhya
(f) Yoga
(g) Bauddha
(h) Jaina
(i) Carvāka

6. Short Essay (in Sanskrit)

7. Unseen passage with the questions (to be answered in Sanskrit).

PAPER-II

Question from Group 4 is to be answered in Sanskrit only. Questions from Groups 1, 2 and 3 are to be answered either in Sanskrit or in the medium opted by the candidate.

Section A

General study of the following groups :—

Group 1
(a) Raghuvamsam—Kalidasa
(b) Kumarasambhavam—Kalidasa
(c) Kiratarjuniyam—Bharavi
(d) Sisupalavadham—Magha
(e) Naisadhiyacaritam—Sriharsa
(f) Kadambari—Banabhatta
(g) Dasakumaracaritam—Dandin
(h) Sivarajyodayam—S.B. Varnekar

Group 2
(a) Isāvāsyopanisad
(b) Bhagavadgitā
(c) Sundarakanda of Valmiki's Ramayana
(d) Arthasastra of Kautilya

Group 3
(a) Svapanavasavadattam—Bhasa
(b) Abhijnanasakuntalam—Kalidasa

(c) Mricchakatikam—Sudraka

(d) Mudraraksasam—Visakhadatta

(e) Uttararamacaritam—Bhavbhuti

(f) Ratnavali—Sriharshavardhana

(g) Venisamharam—Bhattanarayana

Group 4 Short notes in Sanskrit on the following :—

(a) Meghadutam—Kalidasa

(b) Nitisatakam—Bhartrhari

(c) Pancatantra—

(d) Rajatarangini—Kalhana

(e) Harsacaritam—Banabhatta

(f) Amarukasatakam—Amaruka

(g) Gitagovindam—Jayadeva.

Section B

This section will require first hand reading of the following selected texts :— (Questions from Groups 1 & 2 are to be answered in Sanskrit only) Questions from Groups 3 and 4 are to be answered either in Sanskrit or in the Medium opted by the candidate.

Group 1 (a) Raghuvamsam—CantoI, Verses 1 to 10

(b) Kumarasambhavam—Canto I, Verses1 to 10

(c) Kiratarjuniyaue—Canto I, Verses 1 to 10

Group 2 (a) Isavasyopanisad—Verses—1, 2, 4, 6, 7, 15 and 18

(b) Bhagavatgita II Chapter Verses13 to 25

(c) Sundarakandam of Valmiki Canto15, Verses 15 to 30 (Geeta Press Edition)

Group 3 (a) Meghadutam—Verses 1 to 10

(b) Nitisatakam—Verses 1 to 10 (Edited by D.D. Kosambi Bharatiya Vidya Bhavan Publication)

(c) Kadambari—Sukanasopadesa (only)

Group 4 (a) Svapnavasavadattam Act VI

(b) Abhijnansakuntalam Act IV Verses 15 to 30 (M.R. Kale Edition)

(c) Uttararamacaritam Act I Verses 31 to 47 (M.R. Kale Edition).

SANTHALI

PAPER I

(Answers must be written in Santhali)

Section A

Part I—History of Santhali Language

DEPARTMENT OF SANSKRIT

Units of MODULE –I SEMESTER-I 2017-2018

COURSE CODE :SAN101

Selected from the text book "Saraswatisushama-I" as prescribed by Osmania university.

Unit - 1

1.Mudabhishektum varada tvamarhasi - Valmiki

(6th canto of Ayodhya kanda , Srimadramayanam)

Objectives : Study of the poet, srimadramayanam, essay & annotations

2. Himalayo nama nagadhirajah- Kalidasa

Objectives: Study of the poet, works, word to word meaning with translation, essay and annotations

Unit - 2

3.Dharmabaddho Dauvarikah– Ambikadattavyasah

(Selected from Shivarajavijayah)

Objectives: Study of the poet, works, essay & annotations

4.Kritaghne nasty nishkritih - Vishnusharma

(Selected from Panchatantra)

Objectives, study of the poet, work, essay & annotations

Unit – 3

5.Avantu bharataprajah svatantrabharataprabham - Sri Bhashyam Vijayasarathi

Objectives: Study of the poet, works, essay & annotations

6.Esha dharma sanatanah – Subhashitani

Objectives: Study of Subhashitas for practical exam

Unit – 4

7.AjantaSabdah - from prescribed text

8.Samskrutasambhashanabhyasah - Nirdaritasamvadah

Unit – 5

9.Sandhayah - from prescribed text

10.Samskrutasambhashanabhyasah - Nirdaritasamvadah

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DEPARTMENT OF SANSKRIT

Units of MODULE –II SEMESTER-II 2017-2018

COURSE CODE :SAN201

Selected from the text book "Saraswatisushama-I" as prescribed by Osmania university.

Unit - 1

1.Sastuprasthasya mahattvam - Vedavyasah

(90th adhyaya of Ashvamedhikaparva , Mahabharatam)

Objectives : Study of the poet, Mahabharatam, essay & annotations

2. Buddhasyah vairagyodayah- Ashvaghoshah

Objectives: Study of the poet, works, word to word meaning with translation, essay and annotations

Unit - 2

3.Vaijnanaika (Brihat) Samhita– Pullela SriRamachandrudu

(Selected from Vaijnanikasamhita)

Objectives: Study of the poet, works, essay & annotations

4.Na Gangadattah punareti kupam **Vishnusharma**

(Selected from Panchatantra)

Objectives, study of the poet, work, essay & annotations

Unit – 3

5.Madhuropadeshah **Gangadevi**

Objectives: Study of the poetess, work, essay & annotations

6.Daivasurasampadvibhagayogah – **Vedavyasa**

Objectives: Study of Bhagavadgita, essay & annotations

Unit – 4

7.Dhatavah - from prescribed text

8.Samskrutasambhashanabhyasah - Nirdaritasamvadah

Unit – 5

9.Samasah - from prescribed text

10.Samskrutasambhashanabhyasah - Nirdaritasamvadah

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DEPARTMENT OF SANSKRIT

Units of MODULE –III SEMESTER-III 2017-2018

COURSE CODE :SAN301

Selected from the text book "Saraswatisushama-II" as prescribed by Osmania university.

Unit – 1

1.Pravaratatam Prakritihitaya parthivah - Kalidasa

7th Act of Abhijnanashakuntalam

Objectives : Study of the poet, Abhijnanashakuntalam, word to word meaning with translation, essay & annotations

2. Navaratnani- A.Ramulu

Objectives: Study of the poet and annotations

Unit - 2

3.Sudrakavaishampayanayoh sambhashanam – Banabhatta

Selected from Kadambari

Objectives: Study of the poet, works, essay & annotations

4.Ramadasah - Sannidhanam Suryanarayana Shastri

Objectives, study of the poet, works, essay & annotations

Unit – 3

5.Shishyanushasanam - **Taittiriyopanishat**

Objectives: Study of Upanishads, essay & annotations

6.Brahmashaktirgariyasi – **Kenopanishat**

Objectives: Study of Upanishads, essay & annotations

Unit – 4

7.Mahakavishastrakaravibhagah - from prescribed text

8.Alankarah - from prescribed text

Unit – 5

9.Halantasabdarupani - Nidarithasabdah

10.Samskrutasambhashanabhyasah - Nirdaritasamvadah

GOVERNMENT DEGREE COLLEGE FOR WOMEN (UG&PG)

BEGUMPET, HYDERABAD-500016.

AUTONOMOUS (AFFILIATED TO Osmania University)

Re-accredited with 'B' Grade by NAAC.

DEPARTMENT OF SANSKRIT

Units of MODULE –IV SEMESTER-IV 2017-2018

COURSE CODE :SAN401

Selected from the text book "Saraswatisushama-II" as prescribed by Osmania university.

Unit – 1

1. Chitrapatadarshanam - Bhavabhuti

Ist Act of Uttararamacaritam

Objectives: Study of the poet, his works, selected verses translation essay and annotations

2. Vivekananda vijaye Ashtamonkah – Sridharabhaskaravarnekarah

Objectives: Study of the Poet, his works, essay & annotations

Unit – 2

3.Vishrutacaritam - Dandin

Objectives: Study of the Poet, his works, essay & annotations

4.Dhruvopakhyanam - P.V.Kane

Objectives: Study of the Poet, his works, essay & annotations

Unit – 3

5. Dakarakatha - Brihadaranyakopanishat

6.Nachiketopakhyanam - Kathopanishat

Objectives: Study of Upanishads, essay and annotations

Unit – 4

7.Mahakavishastrakaravibhagah - from prescribed text

8.Alankarah - from prescribed text

Unit – 5

9. Krudantaupani - Nirdaritapratyayah

From prescribed grammar part of the text

10.Samskrutasambhashanabhyasah - Nirdaritasamvadah

2017-18

(iv) Saurashtrani Rasdhar-Part 1—ZAVERCHAND MEGHANI

(v) Manvini Bhavai—PANNALAL PATEL

(vi) Dhvani—RAJENDRA SHAH

2. Adhunik yug

(vii) Saptapadi—UMASHANKAR JOSHI

(viii) Janantike—SURESH JOSHI

(ix) Ashwatthama—SITANSHU YASHASCHANDRA.

HINDI

PAPER I

(Answers must be written in Hindi)

Section A

1. History of Hindi Language and Nagari Lipi

I. Grammatical and applied forms of Apbhransh, Awahatta & Arambhik Hindi.

II. Development of Braj and Awadhi as Literary language during medieval period.

III. Early form of Khari-boli in Siddha-Nath Sahitya, Khusero, Sant Sahitaya, Rahim etc. and Dakhni Hindi.

IV. Development of Khari-boli and Nagari Lipi during 19th Century.

V. Standardisation of Hindi Bhasha & Nagari Lipi.

VI. Development of Hindi as a National Language during freedom movement.

VII. The development of Hindi as a National Language of Union of India.

VIII. Scientific & Technical Development of Hindi Language.

IX. Prominent dialects of Hindi and their inter-relationship.

X. Salient features of Nagari Lipi and the efforts for its reform & Standard form of Hindi.

XI. Grammatical structure of Standard Hindi.

Section B

2. History of Hindi Literature

I. The relevance and importance of Hindi literature and tradition of writing History of Hindi Literature.

II. Literary trends of the following four periods of history of Hindi Literature.

A : Adikal—Sidh, Nath and Raso Sahitya.
Prominent poets—Chandvardai, Khusaro, Hemchandra, Vidyapati.

B : Bhaktikal—Sant Kavyadhara, Sufi Kavyadhara, Krishna Bhaktidhara and Ram Bhaktidhara.

Prominent Poets—Kabir, Jayasi, Sur & Tulsi.

C : Ritikal—Ritikavya, Ritibaddhkavya & Riti Mukta Kavya. Prominent Poets—Keshav, Bihari, Padmakar and Ghananand.

D : Adhunik Kal—

a. Renaissance, the development of Prose, Bharatendu Mandal.

b. Prominent Writers—Bharatendu, Bal Krishna Bhatt & Pratap Narain Mishra.

c. Prominent trends of modern Hindi Poetry: Chhayavad, Pragativad, Prayogvad, Nai Kavita, Navgeet and Contemporary poetry and Janvadi Kavita.

Prominent Poets—Maithili Sharan Gupta, Prasad, Nirala, Mahadevi, Dinkar, Agyeya, Muktibodh, Nagarjun.

3. Katha Sahitya

B

A : Upanyas & Realism

B : The origin and development of Hindi Novels.

C : ProminentNovelists—Premchand, Jain-endra, Yashpal, Renu and Bhism Sahani.

D : The origin and development of Hindi short story.

E : Prominent Short Story Writers—Premchand, Prasad, Agyeya, Mohan Rakesh & Krishna Sobti.

4. Drama & Theatre

A : The Origin & Development of Hindi Drama.

B : Prominent Dramatists—Bharatendu, Prasad, Jagdish Chandra Mathur, Ram Kumar Verma, Mohan Rakesh.

C : The development of Hindi Theatre.

5. Criticism

A : The origin and development of Hindi criticism : Saiddhantik, Vyavharik, Pragativadi. Manovishleshanvadi & Nai Alochana.

B : Prominent critics—Ramchandra Shukla, Hajari Prasad Dwivedi, Ram Vilas Sharma & Nagendra.

6. The other form of Hindi prose—Lalit Nibandh,Rekhachitra, Sansmaran, Yatra-vrittant.

PAPER II

(Answers must be written in Hindi)

The paper will require first-hand reading of the prescribed texts and will test the critical ability of the candidates.

Section A

1. Kabir	:	Kabir Granthawali, Ed. Shyam Sundar Das (First hundred Sakhis)
2. Soordas	:	Bhramar Geetsar, Ed. Ramchandra Shukla (First hundred Padas)
3. Tulsidas	:	Ramcharit Manas (Sundar Kand) Kavitawali (Uttarkand)
4. Jayasi	:	Padmawat Ed. Shyam Sundar Das (Sinhal Dwip Khand & Nagmativiyog Khand)
5. Bihari	:	Bihari Ratnakar Ed. Jagnnath Prasad Ratnakar (First 100 Dohas)
6. Maithili Sharan Gupta	:	Bharat Bharati

7. Prasad : Kamayani (Chinta and Shraddha Sarg)
8. Nirala : Rag-Virag, Ed. Ram Vilas Sharma (Ram Ki Shakti Pooja & Kukurmutta)
9. Dinkar : Kurukshetra
10. Agyeya : Angan Ke Par Dwar (Asadhya Veena)
11. Muktiboth : Brahm Rakhashas
12. Nagarjun : Badal Ko Ghirte Dekha Hai, Akal Ke Bad, Harijan Gatha.

Section B

1. Bharatendu : Bharat Durdasha
2. Mohan Rakesh : Ashadh Ka Ek Din
3. Ramchandra : Chintamani (Part I) (KavitaKya Shukla Hai, ShraddhaAurBhakti)
4. Dr. Satyendra : Nibandh Nilaya—Bal Krishna Bhatt, Premchand, Gulab Rai, Hajari Prasad Dwivedi, Ram Vilas Sharma, Agyeya, Kuber Nath Rai.
5. Premchand Godan, Premchand ki Sarvashreshtha Kahaniyan, Ed. Amrit Rai/Manjusha—Prem Chand ki Sarvashreshtha Kahaniyan. Ed. Amrit Rai.
6. Prasad : Skandgupta
7. Yashpal : Divya
8. Phaniswar Nath : Maila Anchal
   Renu
9. Mannu Bhandari : Mahabhoj
10. Rajendra Yadav : Ek Dunia Samanantar (All Stories)

KANNADA

PAPER-I

(Answers must be written in Kannada)

Section A

A. **History of Kannada Language**

What is Language ? General characteristics of Language. Dravidian Family of Languages and its specific features. Antiquity of Kannada Language. Different phases of its Development.

Dialects of Kannada Language : Regional and Social. Various aspects of developments of Kannada Language: phonological and Semantic changes. Language borrowing.

B. **History of Kannada Literature**

Ancient Kannada literature : Influence and Trends, Poets for study : Specified poets from Pampa to Ratnakara Varni are to be studied in the light of contents, form and expression : Pampa, Janna, Nagachandra.

Medieval Kannada literature : Influence and Trends.

Vachana Literature : Basavanna, Akka Mahadevi.

GOVERNMENT DEGREE COLLEGE FOR WOMEN
BEGUMPET, HYDERABAD
AUTONOMOUS
NAAC ACCREDITED 'B'

Syllabus for B.A., B.Com., B.Sc., Ist Year II Semester

Subject : Second language Hindi

I. Prose-गद्य दर्पण

1. धरती का स्वर्ग - विष्णु प्रभाकर
2. अण्डे के छिलके - मोहन राकेश
3. राजनीति का बँटवारा - हरिशंकर परसाई
4. स्वामी विवेकानंद - वंशीधर विद्यालंकार
5. पर्यावरण और हम - राजीव गर्ग

II. Non-detail

1. डिप्टी कलेक्टरी - अमरकांत
2. हँसू या रोऊँ - विनायक राव विद्यालंकार
3. वापसी - उषा प्रियंवदा
4. सेवा - ममता कालिया
5. सिलिया - सुशीला टाकभौरे

पत्र लेखन
विलोम शब्द
संधि विच्छेद

Internal Assessment (From prose & Non detail)
एक वाक्य में उत्तर दीजिए।
जोड़ियाँ बनाइए।
पद, दोहे लिखिए।
रिक्त स्थानों की पूर्ति कीजिए।
विलोम शब्द, संधि-विच्छेद

SSVanjape 7/4/17

Prof. SHUBHADA VANJAPE
CHAIRPERSON
BOARD OF STUDIES
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Dr. SHEELA MISRA
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Osmania University, Hyderabad-500 007

GOVERNMENT DEGREE COLLEGE FOR WOMEN

BEGUMPET, HYDERABAD

AUTONOMOUS

NAAC ACCREDITED 'B'

Syllabus for B.A., B.Com., B.Sc., I Semester

Subject : Second language Hindi

I. गद्य दर्पण

1. उत्साह - रामचंद्र शुक्ल
2. चरित्र-संगठन - बाबू गुलाब राय
3. बाजार दर्शन - जैनेंद्र कुमार
4. भाभी - महादेवी वर्मा
5. भारत में संस्कृति संगम - रामधारी सिंह दिनकर

II. कथा सिंधु (उपवाचक)

1. सद्गति - प्रेमचंद
2. छोटा जादूगर - जयशंकर प्रसाद
3. प्रायश्चित्त - भगवती चरण वर्मा
4. पर्दा - यशपाल
5. चीफ़ की दावत - भीष्म साहनी

III. शब्दों से वाक्य बनाइए।

वाच्य बदलिए।

काल परिवर्तन कीजिए।

IV. प्रशासनिक शब्दावली का

अंग्रेजी से हिंदी में अनुवाद कीजिए।

पदनाम का

हिंदी से अंग्रेजी में अनुवाद कीजिए।

Internal Assessment porsion

सूचना के अनुसार लिखिए।

लिंग, वचन, कारक, वाक्य शुद्ध कीजिए।

एक वाक्य में उत्तर दीजिए। (गद्य दर्पण और कथा सिंधु में से)

जोड़ियाँ बनाइये, रिक्त स्थानों की पूर्ति कीजिए आदि।

Prof. SHUSHAMA KAPE
CHAIRPERSON
BOARD OF STUDIES
DEPARTMENT OF HINDI
OSMANIA UNIVERSITY

Dr. SHEELA MISRA
Professor & Head
Department of Hindi
Osmania University, Hyderabad-500 007

2017-18
RS

Concept of core competence, Strategic flexibility; Reinventing strategy; Strategy and structure; chief Executive and Board; turnaround management; Management of strategic change; Strategic alliances, Mergers and Acquisitions; Strategy and corporate evolution in the Indian context.

6. International Business :

International Business Environment : Changing composition of trade in goods and services; India's Foreign Trade: Policy and trends; Financing of International trade; Regional Economic Cooperation; FTAs; Internationalisation of service firms; International production; Operation Management in International companies; International Taxation; Global competitiveness and technological developments; Global E-Business; Designing global organisational structure and control; Multicultural management; Global business strategy; Global marketing strategies; Export Management; Export-Import procedures; Joint Ventures; Foreign Investment: Foreign direct investment and foreign portfolio investment; Cross-border Mergers and Acquisitions; Foreign Exchange Risk Exposure Management; World Financial Markets and International Banking; External Debt Management; Country Risk Analysis.

MATHEMATICS

PAPER I

(1) Linear Algebra :

Vector spaces over R and C, linear dependence and independence, subspaces, bases, dimensions, Linear transformations, rank and nullity, matrix of a linear transformation.

Algebra of Matrices; Row and column reduction, Echelon form, congruence's and similarity; Rankof a matrix; Inverse of a matrix; Solution of system of linear equations; Eigenvalues and eigenvectors, characteristic polynomial, Cayley-Hamilton theorem, Symmetric, skew-symmetric, Hermitian, skew-Hermitian, orthogonal and unitary matrices and their eigenvalues.

(2) Calculus :

Real numbers, functions of a real variable, limits, continuity, differentiability, mean-value theorem, Taylor's theorem with remainders, indeterminate forms, maxima and minima, asymptotes; Curve tracing; Functions of two or three variables; Limits, continuity, partial derivatives, maxima and minima, Lagrange's method of multipliers, Jacobian.

Riemann's definition of definite integrals; Indefinite integrals; Infinite and improper integral; Double and triple integrals (evaluation techniques only); Areas, surface and volumes.

(3) Analytic Geometry :

Cartesian and polar coordinates in three dimensions, second degree equations in three variables, reduction to Canonical forms; straight lines, shortest distance between two skew lines, Plane, sphere, cone, cylinder, paraboloid, ellipsoid, hyperboloid of one and two sheets and their properties.

(4) Ordinary Differential Equations :

Formulation of differential equations; Equations of first order and first degree, integrating factor; Orthogonal trajectory; Equations of first order but not of first degree, Clairaut's equation, singular solution.

Second and higher order liner equations with constant coefficients, complementary function, particular integral and general solution.

Section order linear equations with variable coefficients, Euler-Cauchy equation;

Determination of complete solution when one solution is known using method of variation of parameters.

Laplace and Inverse Laplace transforms and their properties, Laplace transforms of elementary functions. Application to initial value problems for 2nd order linear equations with constant coefficients.

(5) Dynamics and Statics :

Rectilinear motion, simple harmonic motion, motion in a plane, projectiles; Constrained motion; Work and energy, conservation of energy; Kepler's laws, orbits under central forces.

Equilibrium of a system of particles; Work and potential energy, friction, Common catenary; Principle of virtual work; Stability of equilibrium, equilibrium of forces in three dimensions.

(6) Vector Analysis :

Scalar and vector fields, differentiation of vector field of a scalar variable; Gradient, divergence and curl in cartesian and cylindrical coordinates; Higher order derivatives; Vector identities and vector equation.

Application to geometry : Curves in space, curvature and torsion; Serret-Furenet's formulae.

Gauss and Stokes' theorems, Green's indentities.

PAPER II

(1) Algebra :

Groups, subgroups, cyclic groups, cosets, Lagrange's Theorem, normal subgroups, quotient groups, homomorphism of groups, basic isomorphism theorems, permutation groups, Cayley's theorem.

Rings, subrings and ideals, homomorphisms of rings; Integral domains, principal ideal domains, Euclidean domains and unique factorization domains; Fields, quotient fields.

(2) Real Analysis :

Real number system as an ordered field with least upper bound property; Sequences, limit of a sequence, Cauchy sequence, completeness of real line; Series and its convergence, absolute and conditional convergence of series of real and complex terms, rearrangement of series. Continuity and uniform continuity of functions, properties of continuous functions on compact sets.

Riemann integral, improper integrals; Fundamental theorems of integral calculus.

Uniform convergence, continuity, differentiability and integrability for sequences and series of functions; Partial derivatives of functions of several (two or three) variables, maxima and minima.

(3) Complex Analysis :

Analytic function, Cauchy-Riemann equations, Cauchy's theorem, Cauchy's integral formula, power series, representation of an analytic function, Taylor's series; Singularities; Laurent's series; Cauchy's residue theorem; Contour integration.

(4) Linear Programming :

Linear programming problems, basic solution, basic feasible solution and optimal solution; Graphical method and simplex method of solutions; Duality.

Transportation and assignment problems.

(5) Partial Differential Equations :

Family of surfaces in three dimensions and formulation of partial differential equations; Solution of quasilinear partial differential equations of the first order, Cauchy's method of characteristics; Linear partial differential equations of the second order with constant coefficients, canonical form; Equation of a vibrating string, heat equation, Laplace equation and their solutions.

(6) Numerical Analysis and Computer Programming :

Numerical methods: Solution of algebraic and transcendental equations of one variable by bisection, Regula-Falsi and Newton-Raphson methods, solution of system of linear equations by Gaussian Elimination and Gauss-Jorden (direct), Gauss-Seidel (iterative) methods. Newton's (forward and backward) and interpolation, Lagrange's interpolation.

Numerical integration: Trapezoidal rule, Simpson's rule, Gaussian quadrature formula.

Numerical solution of ordinary differential equations : Eular and Runga Kutta methods.

Computer Programming : Binary system; Arithmetic and logical operations on numbers; Octal and Hexadecimal Systems; Conversion to and from decimal Systems; Algebra of binary numbers.

Elements of computer systems and concept of memory; Basic logic gates and truth tables, Boolean algebra, normal forms.

Representation of unsigned integers, signed integers and reals, double precision reals and long integers.

Algorithms and flow charts for solving numerical analysis problems.

(7) Mechanics and Fluid Dynamics :

Generalised coordinates; D'Alembert's principle and Lagrange's equations; Hamilton equations; Moment of inertia; Motion of rigid bodies in two dimensions.

Equation of continuity; Euler's equation of motion for inviscid flow; Stream-lines, path of a particle; Potential flow; Two-dimensional and axisymmetric motion; Sources and sinks, vortex motion; Navier-Stokes equation for a viscous fluid.

MECHANICAL ENGINEERING

PAPER I

1. Mechanics :

1.1 Mechanics of Rigid Bodies :

Equations of equilibrium in space and its application; first and second moments of area; simple problems on friction; kinematics of particles for plane motion; elementary particle dynamics.

1.2 Mechanics of Deformable Bodies :

Generalized Hooke's law and its application; design problems on axial stress, shear stress and bearing stress; material properties for dynamic loading; bending shear and stresses in beams; determination of principle stresses and strains-analytical and graphical; compound and combined stresses; bi-axial stresses-thin walled pressure vessel; material behaviour and design factors for dynamic load; design of circular shafts for bending and torsional load only; deflection of beam for statically determinate problems; theories of failure.

2.Engineering Materials :

2.20 Vector Calculus

DSE-1F/B

BS:606

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours /week

Objective: Concepts like gradient, divergence, curl and their physical relevance will be taught.
Outcome: Students realize the way vector calculus is used to addresses some of the problems of physics.

Unit- I

Line Integrals: Introductory Example : Work done against a Force-Evaluation of Line IntegralsConservativ Vector Fields-Surface Integrals: Introductory Example : Flow Through a PipeEvaluation of Surface Integrals.

Unit- II

Volume Integrals: Evaluation of Volume integrals
Gradient, Divergence and Curl: Partial differentiation and Taylor series-Partial differentiationTaylor series in more than one variable-Gradient of a scalar field-Gradients, conservative fields and potentials-Physical applications of the gradient.

Unit- III

Divergence of a vector field -Physical interpretation of divergence-Laplacian of a scalar field-Curl of a vector field-Physical interpretation of curl-Relation between curl and rotation-Curl and conservative vector fields.

Text:

- P.C. Matthews, *Vector Calculus*

References:

- G.B. Thomas and R.L. Finney, *Calculus*
- H. Anton, I. Bivens and S. Davis ; *Calculus*
- Smith and Minton, *Calculus*

2.19 Complex Analysis

DSE-1F/A

BS1606

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours /week

Objective: Analytic Functions, contour integration and calculus of residues will be introduced to the students.
Outcome: Students realise calculus of residues is one of the power tools in solvng some problems, like improper and definite integrals, effortlessly.

Unit- I

Regions in the Complex Plane - Analytic Functions - Functions of a Complex Variable - Mappings - Mappings by the Exponential Function - Limits - Theorems on Limits - Limits Involving the Point at Infinity - Continuity - Derivatives - Differentiation Formulas - Cauchy-Riemann Equations - Sufficient Conditions for Differentiability - Polar Coordinates-Harmonic Functions.
Elementary Functions: The Exponential Function - The Logarithmic Function - Branches and Derivatives of Logarithms - Some Identities Involving Logarithms Complex Exponents - Trigonometric Functions - Hyperbolic Functions.

Unit- II

Integrals: Derivatives of Functions $w(t)$ - Definite Integrals of Functions $w(t)$ - Contours - Contour Integrals - Some Examples - Examples with Branch Cuts - Upper Bounds for Moduli of Contour Integrals -Antiderivatives.

Unit- III

Cauchy-Goursat Theorem - Proof of the Theorem - Simply Connected Domains - Multiply Connected Domains - Cauchy Integral Formula - An Extension of the Cauchy Integral Formula - Some Consequences of the Extension - Liouville's Theorem and the Fundamental Theorem of Algebra- Maximum Modulus Principle.

Text:

- James Ward Brown and Ruel V. Churchill, *Complex Variables and Applications* (8e)

References:

- Joseph Bak and Donald J Newman, *Complex analysis*
- Lars V Ahlfors , *Complex Analysis*
- S.Lang, *Complex Analysis*
- B Choudary, *The Elements Complex Analysis*

SEMESTER-II

DIFFERENTIAL EQUATIONS

UNIT-I

Differential equations of first order and first degree: Introduction-Equations in which Variables are Separable – Homogeneous Differential Equations-Differential equations Reducible to Homogeneous form-Linear Differential equations-Differential equations Reducible to Linear form-Exact differential equations-Integrating factors-change in variables – Total Differential Equations-Simultaneous Total Differential equations-Equation of the form $\frac{dx}{P}=\frac{dy}{Q}=\frac{dz}{R}$

UNIT-II

Differential equations of first order but not of first degree: Equations solvable for p-Equation solvable for y- Equation solvable for x- Equations that do not contain x or y – Equations homogeneous in x and y – Equations of the first degree in x and y- Clairaut's equation.
Application of First order differential equations: Growth and Decay- Dynamics of Tumour Growth- Radioactivity and Carbon Dating-Compound Interest- Orthogonal Trajectories.

UNIT-III

Higher order linear differential equations: Solution of homogenous linear differential equations with constant coefficients- Solution of non-homogeneous differential equations P(D)y= Q(x) with constant coefficients by means of polynomial operators when Q(x)= be^{ax},$bsinax/bcosax$,bx^k, Ve^{ax}-Method of undetermined coefficients.

UNIT-IV

Method of variation of parameters-Linear differential equations with non-constant coefficients-the Cauchy-Euler Equation-Legendre's Linear Equations-Miscellaneous Differential equations.

Partial Differential Equations: Formation and solutions-Equations easily integrable –Linear equation of first order

Text:
Zafar Ahsan: Differential equations and their applications

References:
Frank Ayres Jr.: Theory and problems of differential equations
Ford, L.R.: Differential equations
Daniel Murray: Differential equations
S.Bala Chandra Rao: Differential equations with applications and Programs
Stuart.P Hastings.J Bryce McLead:Classical Methods in Ordinary Differential Equations

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GOVERNMENT DEGREE COLLEGE FOR WOMEN (AUTONOMOUS)

BEGUMPET, HYDERABAD

SEMESTER-I

DIFFERENTIAL AND INTEGRAL CALCULUS

UNIT-I

Partial Differentiation: Introduction- Functions of two variables-Neighbourhood of a point (a,b)-Continuity of a function of two variables .Continuity of a point-Limit of a function of two variables-Partial Derivatives – Geometrical representation of a function of two variables –Homogeneous functions.

UNIT-II

Theorems on Total differentials –Composite functions-Differentiation of composite functions-Implicit functions-Equality of f_{xy}(a,b) and f_{yz}(a,b)--Taylor's theorem for a function of two variables-Maxima and Minima of functions of two variables-Lagrange's method of undetermined multipliers.

UNIT-III

Curvature and Evolutes: Introduction-Definition of curvature-Radius of curvature-Length of Arc as a Function.Derivative of arc-Radius of curvature- Cartesian Equations – Newtonian Method –Centre of curvature-Chord of Curvature.

Evolutes: Evolutes and involutes-properties of the Evolute.

Envelopes: One parameter-Family of Curves-consider the family of straight lines-Definition-Determination of envelope.

UNIT-IV

Lengths of plane curves: Introduction-Expression for the lengths of curves y=f(x)-Expression for the length of arcs x=f(y);x=f(t),y=$\varphi(t)$;r=f(θ)

Volumes and surfaces of Revolution: Introduction-Expression for the volume obtained by revolving about either axes –expression for volume obtained by revolving about any line-Area of the surface of the frustum of a cone-Expression for the surface of revolution-Pappus Theorems-Surface of revolution.

Text:

- Shanti Narayana, P.K.Mittal Differential Calculus,S.Chand, New Delhi
- Shanti Narayana, Integral calculus, S.Chand, New Delhi

References:

- William Anthony Granville,Percey F Smith and William Raymond Longley; Elements of the differential and integral calculus
- Joseph Edwards, Differential calculus for beginners
- Smith and Minton, Calculus
- Elis Pine, How to Enjoy Calculus
- Hari Kishan, Differential Calculus

Chairperson
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2.5 Real Analysis

DSC-1C **BS:304**

Theory: 4 credits and Practicals: 1 credits
Theory: 4 hours /week and Practicals: 2 hours /week

Objective: The course is aimed at exposing the students to the foundations of analysis which will be useful in understanding various physical phenomena.
Outcome: After the completion of the course students will be in a position to appreciate beauty and applicability of the course.

Unit- I

Sequences: Limits of Sequences- A Discussion about Proofs-Limit Theorems for Sequences-Monotone Sequences and Cauchy Sequences.

Unit- II

Subsequences-Lim sup's and Lim inf's-Series-Alternating Series and Integral Tests .

Unit- III

Sequences and Series of Functions: Power Series-Uniform Convergence-More on Uniform Convergence-Differentiation and Integration of Power Series (Theorems in this section without Proofs).

Unit- IV

Integration : The Riemann Integral - Properties of Riemann Integral-Fundamental Theorem of Calculus.

Text:

- Kenneth A Ross, *Elementary Analysis-The Theory of Calculus*

References:

- William F. Trench, *Introduction to Real Analysis*
- Lee Larson , *Introduction to Real Analysis I*
- Shanti Narayan and Mittal, *Mathematical Analysis*
- Brian S. Thomson, Judith B. Bruckner, Andrew M. Bruckner; *Elementary Real analysis*
- Sudhir R., Ghorpade, Balmohan V., Limaye; *A Course in Calculus and Real Analysis*

2.8 Algebra

DSC-1D **BS:404**

Theory: 4 credits and Practicals: 1 credits
Theory: 4 hours /week and Practicals: 2 hours /week

Objective: The course is aimed at exposing the students to learn some basic algebraic structures like groups, rings etc.

Outcome: On successful completion of the course students will be able to recognize algebraic structures that arise in matrix algebra, linear algebra and will be able to apply the skills learnt in understanding various such subjects.

Unit- I

Groups: Definition and Examples of Groups- Elementary Properties of Groups-Finite Groups; Subgroups -Terminology and Notation -Subgroup Tests - Examples of Subgroups Cyclic Groups: Properties of Cyclic Groups - Classification of Subgroups Cyclic Groups-Permutation Groups: Definition and Notation -Cycle Notation-Properties of Permutations -A Check Digit Scheme Based on D_5.

Unit- II

Isomorphisms ; Motivation- Definition and Examples -Cayley's Theorem Properties of Isomorphisms -Automorphisms-Cosets and Lagrange's Theorem Properties of Cosets 138 - Lagrange's Theorem and Consequences-An Application of Cosets to Permutation Groups -The Rotation Group of a Cube and a Soccer Ball -Normal Subgroups and Factor Groups ; Normal Subgroups-Factor Groups -Applications of Factor Groups -Group Homomorphisms - Definition and Examples -Properties of Homomorphisms -The First Isomorphism Theorem.

Unit- III

Introduction to Rings: Motivation and Definition -Examples of Rings -Properties of Rings -Subrings -Integral Domains : Definition and Examples –Characteristics of a Ring -Ideals and Factor Rings; Ideals -Factor Rings -Prime Ideals and Maximal Ideals.

Unit- IV

Ring Homomorphisms: Definition and Examples-Properties of Ring- Homomorphisms -The Field of Quotients Polynomial Rings: Notation and Terminology.

Text:

- Joseph A Gallian, *Contemporary Abstract algebra (9th edition)*

Paper – V

2.12 Linear Algebra

DSC-1E **BS:503**

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours /week

Objective: The students are exposed to various concepts like vector spaces , bases , dimension, Eigen values etc.
Outcome: After completion this course students appreciate its interdisciplinary nature.

Unit- I

Vector Spaces : Vector Spaces and Subspaces -Null Spaces, Column Spaces, and Linear Transformations -Linearly Independent Sets; Bases -Coordinate Systems -The Dimension of a Vector Space

Unit- II

Rank-Change of Basis - Eigenvalues and Eigenvectors - The Characteristic Equation

Unit- III

Diagonalization -Eigenvectors and Linear Transformations -Complex Eigenvalues - Applications to Differential Equations -Orthogonality and Least Squares : Inner Product, Length, and Orthogonality -Orthogonal Sets.

Text:

- David C Lay, *Linear Algebra and its Applications* 4e

References:

- S Lang, *Introduction to Linear Algebra*
- Gilbert Strang , *Linear Algebra and its Applications*
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence; *Linear Algebra*
- Kuldeep Singh; *Linear Algebra*
- Sheldon Axler; *Linear Algebra Done Right*

2.13 Solid Geometry

DSE-1E/A **BS:506**

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours /week

Objective: Students learn to describe some of the surfaces by using analytical geometry.
Outcome: Students understand the beautiful interplay between algebra and geometry.

Unit- I

Sphere: Definition-The Sphere Through Four Given Points-Equations of a Circle- Intersection of a Sphere and a Line-Equation of a Tangent Plane-Angle of Intersection of Two Spheres-Radical Plane.

Unit- II

Cones and Cylinders: Definition-Condition that the General Equation of second degree Represents a Cone-Cone and a Plane through its Vertex -Intersection of a Line with a Cone- The Right Circular Cone-The Cylinder- The Right Circular Cylinder.

Unit- III

The Conicoid: The General Equation of the Second Degree-Intersection of Line with a Conicoid-Plane of contact-Enveloping Cone and Cylinder.

Text:

- Shanti Narayan and P K Mittal,*Analytical Solid Geometry* (17e)

References:

- Khaleel Ahmed, *Analytical Solid Geometry*
- S L Loney , *Solid Geometry*
- Smith and Minton, *Calculus*

Semester – V

Paper – VI

2.14 Integral Calculus

DSE-1E/B **BS:506**

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours /week

Objective: Techniques of multiple integrals will be taught.
Outcome: Students will come to know about its applications in finding areas and volumes of some solids.

Unit- I

Areas and Volumes: Double Integrals-Double Integrals over a Rectangle-Double Integrals over General Regions in the Plane-Changing the order of Integration

Unit- II

Triple Integrals: The Integrals over a Box- Elementary Regions in Space-Triple Integrals in General

Unit- III

Change of Variables: Coordinate Transformations-Change of Variables in Triple Integrals.

Text:

- Susan Jane Colley, *Vector Calculus*(4e)

References:

- Smith and Minton, *Calculus*
- Shanti Narayan and Mittal , *Integral calculus*
- Ulrich L. Rohde , G. C. Jain , Ajay K. Poddar and A. K. Ghosh; *Introduction to Integral Calculus*

2.18 Numerical Analysis

DSC-1F **BS:603**

Theory: 3 credits and Practicals: 1 credits
Theory: 3 hours /week and Practicals: 2 hours /week

Objective: Students will be made to understand some methods of numerical analysis.
Outcome: Students realize the importance of the subject in solving some problems of algebra and calculus.

Unit- I

Solutions of Equations in One Variable : The Bisection Method - Fixed-Point Iteration - Newton's Method and Its Extensions - Error Analysis for Iterative Methods - Accelerating Convergence - Zeros of Polynomials and Müller's Method - Survey of Methods and Software.

Unit- II

Interpolation and Polynomial Approximation: Interpolation and the Lagrange Polynomial - Data Approximation and Neville's Method - Divided Differences - Hermite Interpolation - Cubic Spline Interpolation.

Unit- III

Numerical Differentiation and Integration: Numerical Differentiation - Richardson's Extrapolation - Elements of Numerical Integration- Composite Numerical Integration - Romberg Integration - Adaptive Quadrature Methods - Gaussian Quadrature.

Text:

- Richard L. Burden and J. Douglas Faires,*Numerical Analysis* (9e)

References:

- M K Jain, S R K Iyengar and R k Jain, *Numerical Methods for Scientific and Engineering computation*
- B.Bradie , *A Friendly introduction to Numerical Analysis*

1. (a) **Mechanics of Particles :**

Laws of motion; conservation of energy and momentum, applications to rotating frames, centripetal and Coriolis accelerations; Motion under a central force; Conservation of angular momentum, Kepler's laws; Fields and potentials; Gravitational field and potential due to spherical bodies, Gauss and Poisson equations, gravitational self-energy; Two-body problem; Reduced mass; Rutherford scattering; Centre of mass and laboratory reference frames.

(b) **Mechanics of Rigid Bodies :**

System of particles; Centre of mass, angular momentum, equations of motion; Conservation theorems for energy, momentum and angular momentum; Elastic and inelastic collisions; Rigid Body; Degrees of freedom, Euler's theorem, angular velocity, angular momentum, moments of inertia, theorems of parallel and perpendicular axes, equation of motion for rotation; Molecular rotations (as rigid bodies); Di and tri-atomic molecules; Precessional motion; top, gyroscope.

(c) **Mechanics of Continuous Media :**

Elasticity, Hooke's law and elastic constants of isotropic solids and their inter-relation; Streamline (Laminar) flow, viscosity, Poiseuille's equation, Bernoulli's equation, Stokes' law and applications.

(d) **Special Relativity :**

Michelson-Morely experiment and its implications; Lorentz transformations length contraction, time dilation, addition of relativistic velocities, aberration and Doppler effect, mass-energy relation, simple applications to a decay process. Four dimensional momentum vector; Covariance of equations of physics.

2. **Waves and Optics :**

(a) **Waves :**

Simple harmonic motion, damped oscillation, forced oscillation and resonance; Beats; Stationary waves in a string; Pulses and wave packets; Phase and group velocities; Reflection and refraction from Huygens' principle.

(b) **Geometrial Optics :**

Laws of reflection and refraction from Fermat's principle; Matrix method in paraxial optic-thin lens formula, nodal planes, system of two thin lenses, chromatic and spherical aberrations.

(c) **Interference :**

Interference of light -Young's experiment, Newton's rings, interference by thin films, Michelson interferometer; Multiple beam interference and Fabry Perot interferometer.

(d) **Diffraction :**

Fraunhofer diffraction - single slit, double slit, diffraction grating, resolving power; Diffraction by a circular aperture and the Airy pattern; Fresnel diffraction: half-period zones and zone plates, circular aperture.

(e) **Polarisation and Modern Optics :**

Production and detection of linearly and circularly polarized light; Double refraction,

15. Nyaya—Vaiesesika : Theory of Categories; Theory of Appearance; Theory of Pramana; Self, Liberation; God; Proofs for the Existence of God; Theory of Causation; Atomistic Theory of Creation.
16. Samkhya; Prakrit; Purusa; Causation; Liberation.
17. Yoga; Citta; Cittavrtti; Klesas; Samadhi; Kaivalya.
18. Mimamsa: Theory of Knowlegde.
19. Schools of Vedanta : Brahman; Isvara; Atman; Jiva; Jagat; Maya; Avida; Adhyasa; Moksa; Aprthaksiddhi; Pancavidhabheda.
20. Aurobindo: Evolution, Involution; Integral Yoga.

PAPER-II

Socio-Political Philosophy

1. Social and Political Ideals : Equality, Justice, Liberty.
2. Sovereignty : Austin, Bodin, Laski, Kautilya.
3. Individual and State : Rights; Duties and Accountability.
4. Forms of Government : Monarchy; Theocracy and Democracy.
5. Political Ideologies: Anarchism; Marxism and Socialism.
6. Humanism; Secularism; Multi-culturalism.
7. Crime and Punishment : Corruption, Mass Violence, Genocide, Capital Punishment.
8. Development and Social Progress.
9. Gender Discrimination : Female Foeticide, Land and Property Rights; Empowerment.
10. Caste Discrimination : Gandhi and Ambedkar.

Philosophy of Religion

1. Notions of God : Attributes; Relation to Man and the World. (Indian and Western).
2. Proofs for the Existence of God and their Critique (Indian and Western).
3. Problem of Evil.
4. Soul : Immortality; Rebirth and Liberation.
5. Reason, Revelation and Faith.
6. Religious Experience : Nature and Object (Indian and Western).
7. Religion without God.
8. Religion and Morality.
9. Religious Pluralism and the Problem of Absolute Truth.
10. Nature of Religious Language : Analogical and Symbolic; Cognitivist and Non-cognitive.

PHYSICS

PAPER-I

quarter wave plate; Optical activity; Principles of fibre optics, attenuation; Pulse dispersion in step index and parabolic index fibres; Material dispersion, single mode fibers; Lasers-Einstein A and B coefficients. Ruby and He-Ne lasers. Characteristics of laser light-spatial and temporal coherence; Focusing of laser beams. Three-level scheme for laser operation; Holography and simple applications.

3. Electricity and Magnetism :

(a) Electrostatics and Magnetostatics :

Laplace and Poisson equations in electrostatics and their applications; Energy of a system of charges, multipole expansion of scalar potential; Method of images and its applications. Potential and field due to a dipole, force and torque on a dipole in an external field; Dielectrics, polarisation. Solutions to boundary-value problems-conducting and dielectric spheres in a uniform electric field; Magnetic shell, uniformly magnetised sphere; Ferromagnetic materials, hysteresis, energy loss.

(b) Current Electricity :

Kirchhoff's laws and their applications. Biot-Savart law, Ampere's law, Faraday's law, Lenz' law. Self-and mutual- inductances; Mean and rms values in AC circuits; DC and AC circuits with R, L and C components; Series and parallel resonance; Quality factor; Principle of transformer.

4. Electromagnetic Waves and Blackbody Radiation :

Displacement current and Maxwell's equations; Wave equations in vacuum, Poynting theorem; Vector and scalar potentials; Electromagnetic field tensor, covariance of Maxwell's equations; Wave equations in isotropic dielectrics, reflection and refraction at the boundary of two dielectrics; Fresnel's relations; Total internal reflection; Normal and anomalous dispersion; Rayleigh scattering; Blackbody radiation and Planck 's radiation law- Stefan-Boltzmann law, Wien's displacement law and Rayleigh-Jeans law.

5. Thermal and Statistical Physics :

(a) Thermodynamics :

Laws of thermodynamics, reversible and irreversible processes, entropy; Isothermal, adiabatic, isobaric, isochoric processes and entropy changes; Otto and Diesel engines, Gibbs' phase rule and chemical potential; Van der Waals equation of state of a real gas, critical constants; Maxwell-Boltzmann distribution of molecular velocities, transport phenomena, equipartition and virial theorems; Dulong-Petit, Einstein, and Debye's theories of specific heat of solids; Maxwell relations and application; Clausius-Clapeyron equation. Adiabatic demagnetisation, Joule-Kelvin effect and liquefaction of gases.

(b) Statistical Physics :

Macro and micro states, statistical distributions, Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Distributions, applications to specific heat of gases and blackbody radiation; Concept of negative temperatures.

PAPER-II

1. Quantum Mechanics :

Wave-particle duality; Schroedinger equation and expectation values; Uncertainty principle;

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Solutions of the one-dimensional Schroedinger equation for free particle (Gaussian wave-packet), particle in a box, particle in a finite well, linear harmonic oscillator; Reflection and transmission by a step potential and by a rectangular barrier; Particle in a three dimensional box, density of states, free electron theory of metals; Angular momentum; Hydrogen atom; Spin half particles, properties of Pauli spin matrices.

2. **Atomic and Molecular Physics :**

Stern-Gerlach experiment, electron spin, fine structure of hydrozen atom; L-S coupling, J-J coupling; Spectroscopic notation of atomic states; Zeeman effect; Franck-Condon principle and applications; Elementary theory of rotational, vibrational and electronic spectra of diatomic molecules; Raman effect and molecular structure; Laser Raman spectroscopy; Importance of neutral hydrogen atom, molecular hydrogen and molecular hydrogen ion in astronomy. Fluorescence and Phosphorescence; Elementary theory and applications of NMR and EPR; Elementary ideas about Lamb shift and its significance.

3. **Nuclear and Particle Physics :**

Basic nuclear properties-size, binding energy, angular momentum, parity, magnetic moment; Semi-empirical mass formula and applications. Mass parabolas; Ground state of a deuteron, magnetic moment and non-central forces; Meson theory of nuclear forces; Salient features of nuclear forces; Shell model of the nucleus - success and limitations; Violation of parity in beta decay; Gamma decay and internal conversion; Elementary ideas about Mossbauer spectroscopy; Q-value of nuclear reactions; Nuclear fission and fusion, energy production in stars. Nuclear reactors.

Classification of elementary particles and their interactions; Conservation laws; Quark structure of hadrons : Field quanta of electroweak and strong interactions; Elementary ideas about unification of forces; Physics of neutrinos.

4. Solid State Physics, Devices and Electronics :

Crystalline and amorphous structure of matter; Different crystal systems, space groups; Methods of determination of crystal structure; X-ray diffraction, scanning and transmission electron microscopies; Band theory of solids—conductors, insulators and semi-conductors; Thermal properties of solids, specific heat, Debye theory; Magnetism: dia, para and ferromagnetism; Elements of super-conductivity, Meissner effect, Josephson junctions and applications; Elementary ideas about high temperature super-conductivity.

Intrinsic and extrinsic semi-conductors- p-n-p and n-p-n transistors; Amplifiers and oscillators. Op-amps; FET, JFET and MOSFET; Digital electronics-Boolean identities, De Morgan's laws, Logic gates and truth tables. Simple logic circuits; Thermistors, solar cells; Fundamentals of microprocessors and digital computers.

POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

PAPER- I

Political Theory and Indian Politics :

1. Political Theory: meaning and approaches.
2. Theories of state : Liberal, Neo-liberal, Marxist, Pluiralist, post-colonial and Feminist.

B.Sc. (Physics)Semester I-Theory Syllabus 56hrs
Paper – I:Mechanics

(W.E.F the academic year 2016-2017)
(CBCS)

Unit – I

1. Vector Analysis (14)

Scalar and vector fields, gradient of a scalar field and its physical significance.Divergence and curl of a vector field and related problems.Vector integration, line, surface and volume integrals.Stokes, Gauss and Greens theorems-simple applications.

Unit – II

2. Mechanics of Particles (07)

Laws of motion, motion of variable mass system, motion of a rocket, multi-stage rocket, conservation of energy and momentum. Collisions in two and three dimensions, concept of impact parameter, scattering cross-section,

3. Mechanics of rigid bodies (07)

Definition of Rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum and inertial tensor.Euler's equation, precession of a top, Gyroscope,

Unit – III

4. Centralforces (14)

Central forces – definition and examples, conservative nature of central forces, conservative force as a negative gradient of potential energy, equation of motion under a central force, gravitational potential and gravitational field, motion under inverse square law, derivation of Kepler's laws, Coriolis force and its expressions.

Unit – IV

5. Special theory of relativity (14)

Galilean relativity, absolute frames, Michelson-Morley experiment, Postulates of special theory of relativity. Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation.Concept of four vector formalism.

NOTE: Problems should be solved at the end of every chapter of all units.

B.Sc. (Physics)Semester II-Theory Syllabus 56 hrs
Paper – II :Waves and Oscillations

(W.E.F the academic year 2016-2017)
(CBCS)

Unit – I

1. Fundamentals of vibrations (14)

Simple harmonic oscillator, and solution of the differential equation– Physical characteristics of SHM, torsion pendulum, - measurements of rigidity modulus , compound pendulum, measurement of 'g', combination of two mutually perpendicular simple harmonic vibrations of same frequency and different frequencies, Lissajous figures

Unit – II

2. Damped and forced oscillations (14)

Damped harmonic oscillator, solution of the differential equation of damped oscillator. Energy considerations, comparison with undamped harmonic oscillator, logarithmic decrement, relaxation time, quality factor, differential equation of forced oscillator and its solution, amplitude resonance, velocity resonance. Coupled Oscillators.

Unit – III

3. Vibrating Strings (14)

Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at ends, overtones, energy transport, transverse impedance

Unit – IV

4. Vibrations of bars (14)

Longitudinal vibrations in bars- wave equation and its general solution. Special cases (i) bar fixed at both ends ii) bar fixed at the mid point iii) bar free at both ends iv) bar fixed at one end. Transverse vibrations in a bar- wave equation and its general solution. Boundary conditions, clamped free bar, free-free bar, bar supported at both ends, Tuning fork.

NOTE: Problems should be solved at the end of every chapter of all units.

B.Sc. Semester III-Theory Syllabus 56hrs

Subject: Physics Paper – III :Thermodynamics

(W.E.F the academic year 2017-2018)

Unit – I

1. **Kinetic theory of gases: (6)**

   Introduction – Deduction of Maxwell's law of distribution of molecular speeds, Transport Phenomena – Viscosity of gases – thermal conductivity – diffusion of gases.

2. **Thermodynamics: (8)**

   Basics of thermodynamics-Kelvin's and Claussius statements – Thermodynamic scale of temperature – Entropy, physical significance – Change in entropy in reversible and irreversible processes – Entropy and disorder – Entropy of universe – Temperature-Entropy (T-S) diagram – Change of entropy of a perfect gas-change of entropy when ice changes into steam.

Unit – II

3. **Thermodynamic potentials and Maxwell's equations: (7)**

   Thermodynamic potentials – Derivation of Maxwell's thermodynamic relations – Clausius-Clayperon's equation – Derivation for ratio of specific heats – Derivation for difference of two specific heats for perfect gas.Joule Kelvin effect – expression for Joule Kelvin coefficient for perfect and Vanderwaal's gas.

4. **Low temperature Physics: (7)**

   Joule Kelvin effect – liquefaction of gas using porous plug experiment. Joule expansion – Distinction between adiabatic and Joule Thomson expansion – Expression for Joule Thomson cooling – Liquefaction of helium, Kapitza's method – Adiabatic demagnetization – Production of low temperatures – Principle of refrigeration, vapour compression type.

Unit – III

5. **Quantum theory of radiation: (14)**

   Black body-Ferry's black body – distribution of energy in the spectrum of Black body – Wein's displacement law, Wein's law, Rayleigh-Jean's law – Quantum theory of radiation - Planck's law – deduction of Wein'sdistribution law, Rayleigh-Jeans law, Stefan's law from Planck's law.

Measurement of radiation using pyrometers – Disappearing filament optical pyrometer – experimental determination – Angstrom pyroheliometer - determination of solar constant, effective temperature of sun.

Unit – IV

6. Statistical Mechanics: (14)

Introduction, postulates of statistical mechanics.Phase space, concept of ensembles and some known ensembles ,classical and quantum statistics and their differences, concept of probability, Maxwell-Boltzmann's distribution law -Molecular energies in an ideal gas-Maxwell-Boltzmann's velocity distribution law, Bose-Einstein Distribution law, Fermi-Dirac Distribution law, comparison of three distribution laws, Application of B-E distribution to Photons-planks radiation formula, Application of Fermi-Dirac statistics to white dwarfs and Neutron stars.

Textbooks

1. **Fundamentals of Physics**. Halliday/Resnick/Walker.*C. Wiley India Edition 2007.*
2. **Second Year Physics** – *Telugu Academy.*
3. **Modern Physics** by R. Murugeshan and Kiruthiga Siva Prasath (for statistical Mechanics) *S. Chand & Co.*
4. **Heat and Thermodynamics** by Mark W.Zemansky 5th edition McGraw - Hill
5. **Heat and Thermodynamics** by D.S. Mathur.

Reference Books

1. **Modern Physics** by G. Aruldhas and P. Rajagopal, *Eastern Economy Education.*
2. Berkeley Physics Course. Volume-5. **Statistical Physics** by F. Reif. *The McGraw-Hill Companies.*
3. **An Introduction to Thermal Physics** by Daniel V. Schroeder.*Pearson Education Low Price Edition.*
4. **Thermodynamics** by R.C. Srivastava, Subit K. Saha&Abhay K. *Jain Eastern Economy Edition.*
5. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand& Co. Publications.*
6. **Feyman's Lectures on Physics** Vol. 1,2,3& 4. *Narosa Publications.*
7. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*

8 .B.B. Laud **"Introduction to statistics Mechanics"**(Macmillan 1981)

9. F.Reif**: "Statistical Physics "**(Mcgraw-Hill,1998)

10.K.Haung: "**Statistical Physics "**(Wiley Eastern 1988)

B.Sc. Semester IV-Theory Syllabus 56hrs

Subject :(Physics)Paper – IV :Optics

(W.E.F the academic year 2017-2018)

Unit I

1 Interference: (14)

Principle of superposition – coherence – temporal coherence and spatial coherence – conditions for Interference of light

Interference by division of wave front: Fresnel's biprism – determination of wave length of light. Determination of thickness of a transparent material using Biprism – change of phase on reflection – Lloyd's mirror experiment.

Interference by division of amplitude: Oblique incidence of a plane wave on a thin film due to reflected and transmitted light (Cosine law) – Colours of thin films – Non reflecting films – interference by a plane parallel film illuminated by a point source – Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film) – Determination of diameter of wire-Newton's rings in reflected light with and without contact between lens and glass plate, Newton's rings in transmitted light (Haidinger Fringes) – Determination of wave length of monochromatic light – Michelson Interferometer – types of fringes – Determination of wavelength of monochromatic light, Difference in wavelength of sodium D_1,D_2 lines and thickness of a thin transparent plate.

Unit I1:

2 Diffraction: (14)

Introduction – Distinction between Fresnel and Fraunhoffer diffraction Fraunhoffer diffraction:- Diffraction due to single slit and circular aperture – Limit of resolution – Fraunhoffer diffraction due to double slit – Fraunhoffer diffraction pattern with N slits (diffraction grating)

Resolving Power of grating – Determination of wave length of light in normal and oblique incidence methods using diffraction grating.

Fresnel diffraction-Fresnel's half period zones – area of the half period zones –zone plate – Comparison of zone plate with convex lens – Phase reversal zone plate – diffraction at a straight edge – difference between interference and diffraction.

Unit I1I:

3 Polarization (14)

Polarized light : Methods of Polarization, Polarization by reflection, refraction, Double refraction, selective absorption , scattering of light – Brewsters law – Malus law – Nicol prism polarizer and analyzer – Refraction of plane wave incident on negative and positive crystals (Huygen's explanation) – Quarter wave plate, Half wave plate – Babinet's compensator – Optical activity, analysis of light by Laurent's half shade polarimeter.

Unit IV:

4 Aberrations and Fiber Optics : (14)

Introduction – Monochromatic aberrations, spherical aberration, methods of minimizing spherical aberration, coma, astigmatism and curvature of field, distortion. Chromatic aberration – the achromatic doublet – Removal of chromatic aberration of a separated doublet.

Fiber Optics : Introduction – Optical fibers –Principles of fiber communication – Step and graded index fibers – Rays and modes in an optical fiber – Fiber material – Types of optical fibers and advantages of fiber communication.

NOTE: Problems should be solved at the end of every chapter of all units.

Textbooks

1. **Optics** by AjoyGhatak. *The McGraw-Hill companies.*
2. **Optics** by Subramaniyam and Brijlal. *S. Chand & Co.*
3. **Fundamentals of Physics**. Halliday/Resnick/Walker.*C. Wiley India Edition 2007.*
4. **Optics and Spectroscopy**. R. Murugeshan and Kiruthiga Siva Prasath. *S. Chand & Co.*
5. **Second Year Physics** – *Telugu Academy.*

Reference Books

1. **Modern Engineering Physics** by A.S. Vasudeva. *S.Chand& Co. Publications.*
2. **Feyman's Lectures on Physics** Vol. 1,2,3& 4. *Narosa Publications.*
3. **Fundamentals of Optics** by Jenkins A. Francis and White E. Harvey, *McGraw Hill Inc.*
4. K. Ghatak, **Physical Optics'**
5. D.P. Khandelwal, Optical and Atomic Physics' (Himalaya Publishing House, Bombay,1988)
6. Jenkins and White: 'Fundamental of Optics' (McGraw-Hill)
7. Smith and Thomson: 'Optics' (John Wiley and sons)

B.Sc. Semester V-Theory Syllabus

42 hrs

Subject :(Physics) Paper – V :Electromagnetism

(DSE- Compulsory)

(W.E.F the academic year 2018-2019)

Unit I :

Electrostatics (11hrs)

Electric Field:- Concept of electric field lines and electric flux, Gauss's law (Integral and differential forms), application to linear, plane and spherical charge distributions. Conservative nature of electric field E, irrotational field. Electric Potential:- Concept of electric potential, relation between electric potential and electric field, potential energy of a system of charges. Energy density in an electric field.Calculation of potential from electric field for a spherical charge distribution.

Unit II :

Magnetostatics(12hrs)

Concept of magnetic field B and magnetic flux, Biot-Savart's law, B due to a straight current carrying conductor. Force on a point charge in a magnetic field. Properties of B, curl and divergence of B, solenoidal field. Integral form of Ampere's law, applications of Ampere's law: field due to straight, circular and solenoidal currents. Energy stored in magnetic field. Magnetic energy in terms of current and inductance.Magnetic force between two current carrying conductors.Magnetic field intensity. Ballistic Galvanometer:- Torque on a current loop in a uniform magnetic field, working principle of B.G., current and charge sensitivity, electromagnetic damping, critical damping resistance.

Unit III:

Electromagnetic Induction (9hrs)

Faraday's laws of induction (differential and integral form), Lenz's law, self and mutual Induction. Continuity equation, modification of Ampere's law, displacement current, Maxwell equations

Unit IV :

Electromagnetic waves (10hrs)

Maxwell's equations in vacuum and dielectric medium, boundary conditions, plane wave equation: transverse nature of EM waves, velocity of light in vacuum and in medium, polarization, reflection and transmission. Polarization of EM waves, Brewster's angle, description of linear, circular and elliptical polarization.

Text Books

1. Fundamentals of electricity and magnetism By Arthur F. Kip (McGraw-Hill, 1968)
2. Electricity and magnetism by J.H.Fewkes& John Yarwood. Vol.I (Oxford Univ. Press, 1991).
3. Introduction to Electrodynamics, 3rd edition, by David J. Griffiths, (Benjamin Cummings,1998).

Reference Books

4. Electricity and magnetism By Edward M. Purcell (McGraw-Hill Education, 1986)
5. Electricity and magnetism. By D C Tayal (Himalaya Publishing House,1988)
6. Electromagnetics by Joseph A.Edminister 2nd ed.(New Delhi: Tata McGraw Hill, 2006).

B.Sc. Semester V-Theory Syllabus **42hrs**

Subject :(Physics) **(DSE- Elective-I)**

Paper-VI-A – Solid State Physics

Unit-I(11hrs)

Crystal Structure: Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors.Lattice with a Basis – Central and Non-Central Elements.Unit Cell.Miller Indices.Types of Lattices, Reciprocal Lattice.Brillouin Zones.Diffraction of X-rays by Crystals.Bragg's Law.Atomic and Geometrical Factor.

Elementary Lattice Dynamics: Lattice Vibrations and Phonons: Linear Monoatomic and Diatomic Chains. Acoustical and Optical Phonons.Qualitative Description of the Phonon Spectrum in Solids.Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids. T3 law

Unit-II(11hrs)

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin Theory of dia–and Paramagnetic Domains.Curie's law, Weiss's Theory of Ferromagnetism and Ferromagnetic Domains.Discussion of B-H Curve.Hysteresis and Energy Loss.

Dielectric Properties of Materials: Polarization. Local Electric Field at an Atom.Depolarization Field.Electric Susceptibility.Polarizability.ClausiusMosotti Equation.Classical Theory of Electric Polarizability.

Unit-III(10 hrs)

Elementary band theory: Kronig Penny model. Band Gap.Brillouin zones, effective mass of electron. Conductor, Semiconductor (P and N type) and insulator.Conductivity of Semiconductor, mobility, Hall Effect,Electric Conductivity by four probe method& Hall coefficient.

UNIT IV(10hrs)

Lasers: Einstein's A and B coefficients. Metastable states. Spontaneous and Stimulated emissions. Optical Pumping and Population Inversion.Three-Level and Four-Level Lasers.Ruby Laser and He-Ne Laser.

Superconductivity: Experimental Results. Critical Temperature.Critical magnetic field.Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth. Isotope effect.Idea of BCS theory.D.C and A.C Josepson effects.

Text Books:

1. Solid-state Physics, H. Ibach and H. Luth, 2009, Springer
2. Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
3. Solid State Physics, M.A. Wahab, 2011, Narosa Publications
4. Solid State Physics – S. O. Pillai (New Age Publication)
5. Modern Physics by R.Murugesham

B.Sc. Semester V-Theory Syllabus

Subject :(Physics) **(DSE- Elective-I)** **42 hrs**

Paper-VI-B –QUANTUM MECHANICS AND APPLICATIONS

Unit-I (11hrs)

Schrodinger equation & the operators: Time dependent Schrodinger equation and dynamical evolution of a quantum state; Properties of Wave Function. Interpretation of Wave Function Probability and probability current densities in three dimensions; Conditions for Physical Acceptability of Wave Functions.Normalization.Linearity and Superposition Principles.Hermitian operator, Eigen values and Eigen functions. Position, momentum and Energy operators; commutator of position and momentum operators; Expectation values of position and momentum.Wave Function of a Free Particle.

Unit II(11 hrs)

Time independent Schrodinger equation-Hamiltonian, stationary states and energy eigen values; expansion of an arbitrary wave function as a linear combination of energy eigen functions; General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states; Application to spread of Gaussian wave-packet for a free particle in one dimension; wave packets, Fourier transforms and momentum space wave function; Position-momentum uncertainty principle.

Unit-III(10 hrs)

General discussion of bound states in an arbitrary potential- continuity of wave function, boundary condition and emergence of discrete energy levels; application to one-dimensional problem-square well potential; Quantum mechanics of simple harmonic oscillator-energy levels and energy eigen functions ground state, zero point energy & uncertainty principle. One dimensional infinitely rigid box- energy eigen values and eigen functions, normalization; Quantum dot as example; Quantum mechanical scattering and tunnelling in one dimensionacross a step potential & rectangular potential barrier.

Unit-IV(10hrs)

Atoms in Electric & Magnetic Fields: Electron angular momentum. Space quantization.Electron Spin and Spin Angular Momentum.Larmor's Theorem. Spin Magnetic Moment. SternGerlach Experiment. Zeeman Effect: Electron Magnetic Moment and Magnetic Energy, Gyromagnetic Ratio and Bohr Magneton. Atoms in External Magnetic Fields:- Normal and Anomalous Zeeman Effect. Paschen Back and Stark Effect (Qualitative Discussion only). (12 Lectures)

Text Books:

1. A Text book of Quantum Mechanics, P. M.Mathews and K.Venkatesan, 2nd Ed., 2010, McGraw Hill
2. Quantum Mechanics, Robert Eisberg and Robert Resnick, 2nd Edn., 2002, Wiley.
3. Quantum Mechanics, Leonard I. Schiff. 3rd Edn. 2010, Tata McGraw Hill.

B.Sc. Semester VI-Theory Syllabus

Subject :(Physics) **(DSC- Compulsory)** **42hrs**

Paper-VII–MODERN PHYSICS

UNIT-I (11hrs)

Atomic Spectra and Models Inadequacy of classical physics:

Brief Review of Black body Radiation , Photoelectric effect, Compton effect, dual nature of radiation, wave nature of particles. Atomic spectra, Line spectra of hydrogen atom, Ritz Rydberg combination principle. Alpha Particle Scattering, Rutherford Scattering Formula, Rutherford Model of atom and its limitations, Bohr's model of H atom, explanation of atomic spectra, correction for finite mass of the nucleus, Bohr correspondence principle, limitations of Bohr model, discrete energy exchange by atom, Frank Hertz Expt. Sommerfeld'sModification of Bohr's Theory.

UNIT-II(11hrs)

Wave Particle Duality de Broglie hypothesis. Experimental confirmation of matter wave, Davisson Germer Experiment, velocity of de Broglie wave, wave particle duality, Complementarity. Superposition of two waves, phase velocity and group velocity , wave packets ,Gaussian Wave Packet , spatial distribution of wave packet, Localization of wave packet in time. Time development of a wave Packet; Wave Particle Duality, Complementarity . Heisenberg Uncertainty Principle,Illustration of the Principle through thought Experiments of Gamma ray microscope and electron diffraction through a slit. Time independent and time dependent Schrodinger wave equation.Estimation of ground state energy of harmonic oscillator and hydrogen atom, non-existence of electron in the nucleus.Uncertainty and Complementarities.

UNIT-III(9hrs)

Nuclear Physics Size and structure of atomic nucleus and its relation with atomic weight; Impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Nature of nuclear force, NZ graph, Liquid Drop model: semi-empirical mass formula and binding energy, Nuclear Shell Model and magic numbers.

Unit IV(11hrs)

Radioactivity: stability of the nucleus; Law of radioactive decay; Mean life and half-life; Alpha decay; Beta decay- energy released, spectrum and Pauli's prediction of neutrino; Gamma ray emission, energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus. Fission and fusion- mass deficit, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with Uranium 235; Fusion and thermonuclear reactions driving stellar energy (brief qualitative discussions), Classification of Elementary Particles

B.Sc. Semester VI-Theory Syllabus

Subject :(Physics) **(DSE- Elective-II)** **42 hrs**

Paper-VIII-A :Basic Electronics

Unit-I: (10hrs)

Network Elements and Network Theorems

Passive elements, Power sources, Active Elements, Network Models: T and π Transformations, Superposition theorem,Thevenin's Theorem, Norton's theorem. Reciprocity Theorem and Maximum power transfer theorem (Simple problems).

Two-port Networks – Introduction- Z-parameters, Y-parameters, h-parameters and ABCD-parameters (Simple problems).

Unit – II: (10hrs)

Band theory of P-N junction

1. Energy band in solids (band theory), valence band, conduction band and forbidden energy gap solids, Insulators, semi conductors and, pure or intrinsic semiconductors and impurity or extrinsic semi-conductors. N-type extrinsic semi-conductors, P-type extrinsic semi-conductors, Fermi level, continuity equation.

2. Diodes: P-N junction diode, Bridge rectifier. Zener diode & its Characteristics.Zener diode as voltage regulator.

Unit-III: (11hrs)

1. Bipolar Junction Transistor (BJT) – p-n-p and n-p-n transistors, current components in transistors, CB, CE and CC configurations – transistor as an amplifier -RC coupled amplifier. (Qualitative analysis)

2. Feedback Concept & Oscillators: Feedback, General theory of feedback–Concepts of a Oscillators, Barkhausen's criteria, Phase shift Oscillator.

Unit-IV: (11hrs)

1. Digital Electronics

Binary number system, converting Binary to Decimal and vice versa.Binary addition and subtraction (1's and 2's complement methods).Hexadecimal number system.Conversion from Binary to Hexadecimal – vice versa and Decimal to Hexadecimal vice versa.

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B.Sc. Semester VI-Theory Syllabus **42 hrs**

Subject :(Physics) **(DSE- Elective-II)**

Paper-VIII-B :Physics of Semiconductor Devices

Unit-I: (11hrs)

Semiconductor Physics: Conductors, Semiconductors, forbidden orbits, energy levels, crystals and covalent bonds, free electrons and holes, recombination and life-time, energy bands. Intrinsic Semiconductor- intrinsic carrier concentration, density of electrons in conduction band, fermi-level, mass action law. Carrier transport phenomena- mobility, resistivity, diffusivity, Einstein's relation, current density equation. Extrinsic semiconductor-n-type semiconductor, p-type semiconductor, energy band diagram of extrinsic semiconductor. Hall effect- mobility and Hall angle, experiment arrangement for the study of Hall effect, significance of Hall effect.

Unit – II: (11hrs)

P-N junction-Depletion layer, Energy level diagram of p-n junction, Band structure of an open circuited p-n junction, Biasing of p-n junction, effect of barrier potential on forward bias, reverse leakage current, reverse breakdown, P-n junction under various conditions-thermal equilibrium, forward and reverse bias, current-voltage characteristics. Derivation of ideal diode equation of p-n junction, diode model and its approximations.Forward and reverse resistance of diode.Dynamic characteristic of diode.

Unit-III: (10hrs)

Special diodes-Zener diode, Light –emitting diode (LED), Photo-diode, Schottky diode, Backward diodes and Tunnel diode.
Transistors- Bipolar junction transistor (BJT), transistor characteristics, transistor equation in active region, field effect transistor (FET), Phototransistor and MOSFETTs.

Unit-IV: (10 hrs)

Control devices- Shockley Diode, Silicon Controlled Rectifier (SCR), Silicon Controlled Switch (SCS), Unijunction transistor (UJT), Solar Cells, Opto-couplers.

Textbooks

1. A First Course in Electronics- Anwar A. Khan&Kanchan K. Dey, PHI
2. Physics of Semiconductor Devices- S. M. Sze
3. Physics of Semiconductors- Streetman

Solutions of the one-dimensional Schroedinger equation for free particle (Gaussian wave-packet), particle in a box, particle in a finite well, linear harmonic oscillator; Reflection and transmission by a step potential and by a rectangular barrier; Particle in a three dimensional box, density of states, free electron theory of metals; Angular momentum; Hydrogen atom; Spin half particles, properties of Pauli spin matrices.

2. **Atomic and Molecular Physics :**

Stern-Gerlach experiment, electron spin, fine structure of hydrozen atom; L-S coupling, J-J coupling; Spectroscopic notation of atomic states; Zeeman effect; Franck-Condon principle and applications; Elementary theory of rotational, vibrational and electronic spectra of diatomic molecules; Raman effect and molecular structure; Laser Raman spectroscopy; Importance of neutral hydrogen atom, molecular hydrogen and molecular hydrogen ion in astronomy. Fluorescence and Phosphorescence; Elementary theory and applications of NMR and EPR; Elementary ideas about Lamb shift and its significance.

3. **Nuclear and Particle Physics :**

Basic nuclear properties-size, binding energy, angular momentum, parity, magnetic moment; Semi-empirical mass formula and applications. Mass parabolas; Ground state of a deuteron, magnetic moment and non-central forces; Meson theory of nuclear forces; Salient features of nuclear forces; Shell model of the nucleus - success and limitations; Violation of parity in beta decay; Gamma decay and internal conversion; Elementary ideas about Mossbauer spectroscopy; Q-value of nuclear reactions; Nuclear fission and fusion, energy production in stars. Nuclear reactors.

Classification of elementary particles and their interactions; Conservation laws; Quark structure of hadrons : Field quanta of electroweak and strong interactions; Elementary ideas about unification of forces; Physics of neutrinos.

4. **Solid State Physics, Devices and Electronics :**

Crystalline and amorphous structure of matter; Different crystal systems, space groups; Methods of determination of crystal structure; X-ray diffraction, scanning and transmission electron microscopies; Band theory of solids—conductors, insulators and semi-conductors; Thermal properties of solids, specific heat, Debye theory; Magnetism: dia, para and ferromagnetism; Elements of super-conductivity, Meissner effect, Josephson junctions and applications; Elementary ideas about high temperature super-conductivity.

Intrinsic and extrinsic semi-conductors- p-n-p and n-p-n transistors; Amplifiers and oscillators. Op-amps; FET, JFET and MOSFET; Digital electronics-Boolean identities, De Morgan's laws, Logic gates and truth tables. Simple logic circuits; Thermistors, solar cells; Fundamentals of microprocessors and digital computers.

POLITICAL SCIENCE AND INTERNATIONAL RELATIONS

PAPER- I

Political Theory and Indian Politics :

1. Political Theory: meaning and approaches.
2. Theories of state : Liberal, Neo-liberal, Marxist, Pluiralist, post-colonial and Feminist.

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

3. Justice : Conceptions of justice with special reference to Rawl's theory of justice and its communitarian critiques.
4. Equality : Social, political and economic; relationship between equality and freedom; Affirmative action.
5. Rights : Meaning and theories; different kinds of rights; Concept of Human Rights.
6. Democracy : Classical and contemporary theories; different models of democracy—representative, participatory and deliberative.
7. Concept of power : hegemony, ideology and legitimacy.
8. Political Ideologies : Liberalism, Socialism, Marxism, Fascism, Gandhism and Feminism.
9. Indian Political Thought: *Dharamshastra, Arthashastra* and Buddhist Traditions; Sir Syed Ahmed Khan, Sri Aurobindo, M. K. Gandhi, B. R. Ambedkar, M. N. Roy.
10. Western Political Thought : Plato, Aristotle, Machiavelli, Hobbes, Locke, John S. Mill, Marx, Gramsci, Hannah Arendt.

Indian Government and Politics

1. **Indian Nationalism :**
   (a) Political Strategies of India's Freedom Struggle : Constitutionalism to mass Satyagraha, Non-cooperation, Civil Disobedience; Militant and Revolutionary Movements, Peasant and Workers Movements.
   (b) Perspectives on Indian National Movement; Liberal, Socialist and Marxist; Radical Humanist and Dalit.
2. Making of the Indian Constitution : Legacies of the British rule; different social and political perspectives.
3. Salient Features of the Indian Constitution : The Preamble, Fundamental Rights and Duties, Directive Principles; Parliamentary System and Amendment Procedures; Judicial Review and Basic Structure doctrine.
4. (a) Principal Organs of the Union Government : Envisaged role and actual working of the Executive, Legislature and Supreme Court.
   (b) Principal Organs of the State Government : Envisaged role and actual working of the Executive, Legislature and High Courts.
5. Grassroots Democracy : Panchayati Raj and Municipal Government; Significance of 73rd and 74th Amendments; Grassroot movements.
6. Statutory Institutions/Commissions : Election Commission, Comptroller and Auditor General, Finance Commission, Union Public Service Commission, National Commission for Scheduled Castes, National Commission for Scheduled Tribes, National Commission for Women; National Human Rights Commission, National Commission for Minorities, National Backward Classes Commission.
7. Federalism : Constitutional provisions; changing nature of centre-state relations; integrationist tendencies and regional aspirations; inter-state disputes.
8. Planning and Economic development : Nehruvian and Gandhian perspectives; Role of

planning and public sector; Green Revolution, land reforms and agrarian relations; liberalization and economic reforms.

9. Caste, Religion and Ethnicity in Indian Politics.
10. Party System : National and regional political parties, ideological and social bases of parties; Patterns of coalition politics; Pressure groups, trends in electoral behaviour; changing socio-economic profile of Legislators.
11. Social Movement : Civil liberties and human rights movements; women's movements; environmentalist movements.

PAPER-II

Comparative Politics and International Relations

Comparative Political Analysis and International Politics :

1. Comparative Politics : Nature and major approaches; Political economy and political sociology perspectives; Limitations of the comparative method.
2. State in Comparative Perspective : Characteristics and changing nature of the State in capitalist and socialist economies, and advanced industrial and developing societies.
3. Politics of Representation and Participation : Political parties, pressure groups and social movements in advanced industrial and developing societies.
4. Globalisation : Responses from developed and developing societies.
5. Approaches to the Study of International Relations : Idealist, Realist, Marxist, Functionalist and Systems theory.
6. Key Concepts in International Relations : National interest, security and power; Balance of power and deterrence; Transational actors and collective security; World capitalist economy and globalisation.
7. Changing International Political Order :
   (a) Rise of super powers; Strategic and ideological Bipolarity, arms race and cold war; Nuclear threat;
   (b) Non-aligned Movement : Aims and achievements.
   (c) Collapse of the Soviet Union; Unipolarity and American hegemony; Relevance of non-alignment in the contemporary world.
8. Evolution of the International Economic System : From Brettonwoods to WTO; Socialist economies and the CMEA (Council for Mutual Economic Assistance); Third World demand for new international economic order; Globalisation of the world economy.
9. United Nations : Envisaged role and actual record; Specialized UN agencies—aims and functioning; need for UN reforms.
10. Regionalisation of World Politics : EU, ASEAN, APEC, AARC, NAFTA.
11. Contemporary Global Concerns : Democracy, human rights, environment, gender justice terrorism, nuclear proliferation.

India and the World

1. Indian Foreign Policy : Determinants of foreign policy; the institutions of policy-making;

Continuity and change.

2. India's Contribution to the Non-Alignment Movement Different phases; Current role.
3. India and South Asia :
   (a) Regional Co-operation : SAARC-past performance and future prospects.
   (b) South Asia as a Free Trade Area.
   (c) India's "Look East" policy.
   (d) Impediments to regional co-operation : River water disputes; illegal cross border migration; Ethnic conflicts and insurgencies; Border disputes.
4. India and the Global South : Relations with Africa and Latin America; Leadership role in the demand for NIEO and WTO negotiations.
5. India and the Global Centres of Power : USA, EU, Japan, China and Russia.
6. India and the UN System: Role in UN Peace-keeping; Demand for Permanent Seat in the Security Council.
7. India and the Nuclear Question : Changing perceptions and policy.
8. Recent developments in Indian Foreign Policy : India's position on the recent crises in Afghanistan, Iraq and West Asia, growing relations with US and Isreal; Vision of a new world order.

PSYCHOLOGY

PAPER-I

Foundations of Psychology

1. **Introduction** : Definition of Psychology; Historical antecedents of Psychology and trends in the 21st centrury; Psychology and scientific methods; Psychology in relation to other social sciences and natural sciences; Application of Psychology to societal problems.

2. **Methods of Psychology** : Types of research : Descriptive, evaluative, diagnostic and prognostic; Methods of Research : Survey, observation, case-study and experiments; Characteristics of experimental design and non-experimental designs; quasi-experimental designs; Focussed group discussions, brain storming, grounded theory approach.

3. **Research methods** : Major steps in psychological research (problem statement, hypothesis formulation, research design, sampling, tools of data collection, analysis and interpretation and report writing); Fundamental versus applied research; Methods of data collection (interview, observation, questionnaire and case study). Research Designs (Ex-post facto and experimental). Application of statistical techniques (t-test, two-way ANOVA, correlation and regression and factor analysis) item response theory.

4. **Development of Human Behaviour** : Growth and development; Principles of development, Role of genetic and environmental factors in determining human behaviour; Influence of cultural factors in socialization; Life span development—Characteristics, development tasks, promoting psychological well-being across major stages of the life span.

5. **Sensation, Attention and Perception** : Sensation: concepts of threshold, absolute and difference thresholds, signal-detection and vigilance; Factors influencing attention including set

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POLITICAL SCIENCE
PAPER-III, V SEMESTER- SYLLABUS-2016-17
MODULE: WESTERN POLITICAL THOUGHT

Duration: 60 Hrs

UNIT-I : INTRODUCTION AND ANCIENT POLITICAL THOUGHT 25 hrs

1. Political Thought: Nature, Methods and Significance .
2. Western and Indian Political Thought Comparison.
3. Plato: Theory of Justice and Ideal State.
4. Aristotle: Classification of governments , Theory of Revolutions, and slavery

UNIT-II : MEDIEVAL AND EARLY MODERN POLITICAL THOUGHT 15 hrs

1. Saint Thomas Aquinas: Theory of Law
2. Church State Controversy
3. Nicolo Machiavelli: as a Modern political Thinker and Views on State Craft

UNIT-III: SOCIAL CONTRACTUALISTS AND UTILITARIANS 25 hrs

1. Thomas Hobbes- Individualism and Absolute Sovereignty .
2. John Lock- Natural rights and Limited Government
3. Jean Jacques Rousseau- General will and Popular Sovereignty.
4. Jeremy Bentham-Principles of Utilitarianism .
5. J.S. Mill-Liberty, Representative Government.

UNIT-IV: MARXIST PHILOSOPHY 15 hrs

1. Karl Marx: Dialectical and Historical Materialism and Communism.
2. Mao Ze Dong : On Contradictions, New Democratic Revolution.
3. New Antonio Gramsci : Hegemony and Civil Society

BOOKS RECOMMENDED

1. A History of Political Thought: plat to Marx, Mukherjee & Ramaswamy.
2. Political Ideologies: their Origins and Impact. Baradat, Prentice Mall of India.

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PAPER-III, VI SEMESTER-SYLLABUS 2016-17
MODULE: INDIAN POLITICAL THOUGHT

DURATION: 80 HRS.

UNIT-I : SOURCES, CONCEPTS AND ANCIENT POLITICAL THOUGHT 15 hrs

1. Main Sources and Concepts of Indian Political Thought.
2. Manu- Origin of the State - Varna Dharma, State and Society

UNIT-II: ANCIENT AND MEDIEVAL POLITICAL THOUGHT 25 hrs

1. Kautilya- Sptanga Theory, State Craft, Mandala Theory.
2. Budda- Social and political Ideas- Dharma and Sangha.

UNIT-III: EGALITARIAN THINKERS 20 hrs

1. Jyothirao Phule : Critique of Brahmanism, Social revolution.
2. B.R. Ambedkar : Theory of Caste , Anhilation of Caste and State Socialism.

UNIT-IV: NATIONALIST POLITICAL THOUGHT 20 hrs

1. Mohandas Karamchand Gandhi- Ahimsa, Satyagraha
2. Jawaharlal Nehru- Democratic Socialism, Secularism

BOOKS RECOMMENDED:

1. Political Ideas in Ancient India: R.S. Sharma
2. Annihilation of Caste: Ambedkar B.R.

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POLITICAL SCIENCE
PAPER - IV, ELECTIVE - I, V SEMESTER- SYLLABUS, 2016-17
MODULE: INTERNATIONAL RELATIONS-I

Duration: 90 HRS

UNIT: I: INTRODUCTION — 15 hrs

1. Introduction to international relationals Definition, Evolution, Scope and Significance .
2. Rise of Sovereign state system

UNIT-II HISTORY OF INTERNATIONAL RELATIONS — 25 hrs

1. Colonialism - Causes, Phases, and Impact
2. The First World war and the Second world war: Causes and Consequences.

UNIT-III: POST WAR DEVELOPMENTS — 15 hrs

1. Decolonization-Emergence of Third world, Problems and prospects.
2. Cold war- Causes, Phases and Impact

UNIT-IV: CONCEPTS AND INTERNATIONAL POLITICAL ECONOMY — 25 hrs

1. Power- National Power Super Power, Regional Power , Detente Bipolarity, Unipolarity and Multipolarity, peace and Security.
2. Neo Colonialism: North-South Dialogue, South- South Cooperation.
3. IBRD, IMF, WTO and MNCS
4. Globalisation.

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PAPER - IV ELECTIVE-I, VI SEMESTER- SYALLABUS- 2016-17
MODULE: INTERNATIONAL RELATIONS-II

DURATION: 90 HRS

UNIT-I: INTERNATIONAL AND REGIONAL ORGANIZATIONS 25 hrs

1. United Nations: Structure and ROLE, Need for reforms
2. Regional Organizationals: EU, ASEAN; SAARC, BRICS

UNIT-II: INTERNATIONAL SECURITY 15 hrs

1. Arms race, Arms Control, Disarmament
2. Issues in nuclear Politics

UNIT-III: FOREIGN POLICY 25 hrs

1. Foreign Policy Determinants- India's Foreign Policy Features , Non-Alignment Relevance
2. India and Major Powers (USA, Russia) India and Neighbouring Countries (China and Pakistan)

UNIT-IV: EMERGING AREAS IN INTERNATIONAL RELATIONS 15 hrs

1. Environment, Issues and Challengers
2. Human Rights, concept Evolution and Growth
3. Terrorism, causes, Types, Methods and Measures to Combat

BOOKS RECOMMENDED

1. International Relations : PEU GHOSH, Prentice Hall
2. International Relations: Prakash Chander & Prem Arora "Cosmos Book Hives"
3. Indian Foreign Policy , Foreign services Institute, New Delhi, India.
4. International Relations: Vinay Kumar Malhotra
5. International Relations : V.N. Khanna.

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PAPER IV, ELECTIVE-II, V SEMESTER SYLLABUS-2016-17
MODULE : GOVERNMENT AND POLITICS IN TELANGANA-1
MODEL QUESTION PAPER

DURATION: 60 HRS.

UNIT-I : Historical back ground of Telangana **25 hrs**

1. Nizam' s Hyderabad State.
2. Integration of Princely State- Hyderabad State Congress , Police Action Emergence of Hyderabad state.

UNIT-II: Public Awaking in Telangana **15 hrs**

1. Library Movement
2. Dalit Movement
3. Tribal Movement
4. Telangana Movement

UNIT-III: State Reorganization **25 hrs**

1. Fazal Ali Commission Observations
2. Formation of Audra Prakash
3. Gentlemen's Agreement
4. Mulki Rules- Supreme Court Verdicts
5. Formation of Regional Committees Six Point Formula.

UNIT-1V :Phases of Telangana Agitation **15 hrs**

1. Telangana Agitation -1969
2. Separate Andhra Agitation-1972
3. Telangana Maha Sabha- Talangana Jan Sabha

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PAPER IV, ELECTIVE-II, VI SEMESTER - SYLLABUS-2016-17
MODULE: GOVERNMENT AND POLITICS IN TELANGANA –II
MODEL QUESTION PAPER

TIME: 2½HRS
MARKS: 75.

UNIT-I: INJUSTICE TO TELANGANA 25 hrs

1. Water Resource
2. Employment
3. Educational Opportunities
4. Cultural Discrimination
5. Budgetary Deprivation

UNIT-II: COMMITTEES COMMISSIONS ON TELANGANA AND ROLE OF POLITICAL PARTIES 15 hrs

1. Girglani Commission
2. Rosaiah Committee
3. Justice Sri Krishna Committee
4. National Parties- INC,BJP, CPI,CPM,BSP.
5. Regional Parties- TRS, TDP, MIM,YSRCP.
6. Role of ML Parties: New Democracy, Jana Shakti And Maoistparty

UNIT-III: ROLE OF NON PARTY & CIVIL SOCIETY ACTORS 25 hrs

1. Students JAC
2. Political JAC and its activities
3. Other JACS:
   a. Cultural JAC
   b. Employees JAC
   c. Lawyers JAC

d. Caste and Community JACS

e. Role of Media.

UNIT-IV: EMERGENCE OF TELANGANA STATE PARTY POLITICS AND ELECTIONS IN TELANAGA **15 hrs**

1. Constitutional Processes
2. Formation of Telangana State
3. Electoral alliances, 2004, 2009 and 2014 and Promises.
4. Formation of TRS Government.

BOOKS RECOMMENDED

1. Bala Ramulu.ch and D. Ravionder, June 2012, "Five decades of Democratic Decentralizations Process in Andhra Pradesh in Social Change Journal of the Council for Social Development- Published by Sage International 'Vol. 42, No.2. PP. 165-186.

2. Jadhav Keshav Rao, 2010, "Backwardisation" of Telangana Economic and Political Weekly. Vol- XLV NO.13, Mar-27, PP. 15-20.

3. Kodanda Ram. M,2007, Movement for Telangana State , A struggle for Autonomy Economic and Political Weekly, Vol-XLII No. 02, Jan 13, PP. 92.94.

4. Melkota , S. Rama, Revathi E, Lalitha k, Sajaya K and Sunitha A, 2010' the Movement for Telangana : Myth and Reality Economic and Political Weekly, Vol- XLN No. 2, Jan-9, PP.8-11.

University Nominee

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Chairman Bos

C. Shanthi

Members

(Dr M. Ramaccha)

(S. RAJU)

9. **Psychological problem of social integration :**

The concept of social integration. The problem of caste, class, religion and language conflicts and prejudice. Nature and manifestation of prejudice between the ingroup and outgroup. Casual factors of such conflicts and prejudices. Psychological strategies for handling the conflicts and prejudices. Measures to achieve social integration.

10. **Application of Psychology in Information Technology and Mass Media :**

The present scenario of information technology and the mass media boom and the role of psychologists. Selection and training of Psychology professionals to work in the field of IT and mass media. Distance learning through IT and mass media. Entrepreneurship through e-commerce. Multilevel marketing. Impact of TV and fostering value through IT and mass media. Psychological consequences of recent developments in Information Technology.

11. **Psychology and Economic development :**

Achievement motivation and economic development. Characteristics of entrepreneurial behaviour. Motivating and Training people for entrepreneurship and economic development; Consumer rights and consumer awareness, Government policies for promotion of entrepreneurship among youth including women entreprenures.

12. **Application of Psychology to environment and related fields :**

Environmental Psychology effects of noise, pollution and crowding. Population Psychology : Psychological consequence of population explosion and high population density. Motivating for small family norms. Impact of rapid scientific and technological growth on degradation of environment.

13. **Application of psychology in other fields :**

(a) **Military Psychology**

Devising psycological tests for defence personnel for use in selection, Training, counseling; training psychologists to work , with defence personnel in promoting positive health; Human engineering in defence.

(b) **Sports Psychology**

Psychological interventions in improving performance of athletes and sports. Persons participating in Individual and Team Games.

(c) **Media influences on pro and anti-social behaviour.**

(d) **Psychology of Terrorism.**

14. **Psychology of Gender :**

Issues of discrimination, Management of diversity; Glass ceiling effect, Self-fulfilling prophesy, Women and Indian society.

PUBLIC ADMINISTRATION

PAPER-I

Administration Theory

1. **Introduction :**

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

Meaning, scope and significance of Public Administration, Wilson's vision of Public Administration, Evolution of the discipline and its present status. New Public Administration, Public Choice approach; Challenges of liberalization, Privatisation, Globalisation; Good Governance: concept and application; New Public Management.

2. **Administrative Thought :**

Scientific Management and Scientific Management movement; Classical Theory; Weber's bureaucratic model its critique and post-Weberian Developments; Dynamic Administration (Mary Parker Follett); Human Relations School (Elton Mayo and others); Functions of the Executive (C.I. Barnard); Simon's decision-making theory; Participative Management (R. Likert, C. Argyris, D. McGregor.)

3. **Administrative Behaviour :**

Process and techniques of decision-making; Communication; Morale; Motivation Theories content, process and contemporary; Theories of Leadership: Traditional and Modem:

4. **Organisations :**

Theories systems, contingency; Structure and forms: Ministries and Departments, Corporations, Companies; Boards and Commissions; Ad hoc, and advisory bodies; Headquarters and Field relationships; Regulatory Authorities; Public-Private Partnerships.

5. **Accountability and Control :**

Concepts of accountability and control; Legislative, Executive and judicial control over administration; Citizen and Administration; Role of media, interest groups, voluntary organizations; Civil society; Citizen's Charters; Right to Information; Social audit.

6. **Administrative Law :**

Meaning, scope and significance; Dicey on Administrative law; Delegated legislation; Administrative Tribunals.

7. **Comparative Public Administration :**

Historical and sociological factors affecting administrative systems; Administration and politics in different countries; Current status of Comparative Public Administration; Ecology and administration; Riggsian models and their
critique.

8. **Development Dynamics :**

Concept of development; Changing profile of development administration; 'Anti-development thesis'; Bureaucracy and development; Strong state versus the market debate; Impact of liberalisation on administration in developing countries; Women and development the self-help group movement.

9. **Personnel Administration :**

Importance of human resource development; Recruitment, training, career advancement, position classification, discipline, performance appraisal, promotion, pray and service conditions; employer-employee relations, grievance redressal mechanism; Code of conduct; Administrative ethics.

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

10. **Public Policy :**

Models of policy-making and their critique; Processes of conceptualisation, planning, implementation, monitoring, evaluation and review and their limitations; State theories and public policy formulation.

11. **Techniques of Adminstrative Improvement :**

Organisation and methods, Work study and work management; e-governance and information technology; Management aid tools like network analysis, MIS, PERT, CPM.

12. **Financial Administration :**

Monetary and fiscal policies: Public borrowings and public debt Budgets types and forms; Budgetary process; Financial accountability; Accounts and audit.

PAPER-II

Indian Administration

1. **Evolution of Indian Administration :**

Kautilya Arthashastra; Mughal administration; Legacy of British rule in politics and administration Indianization of Public services, revenue administration, district Administration, local self Government.

2. **Philosophical and Constitutional framework of Government :**

Salient features and value premises; Constitutionalism; Political culture; Bureaucracy and democracy; Bureaucracy and development.

3. **Public Sector Undertakings :**

Public sector in modern India; Forms of Public Sector Undertakings; Problems of autonomy, accountability and control; Impact of liberalization and privatization.

4. **Union Government and Administration :**

Executive, Parliament, Judiciary-structure, functions, work processes; Recent trends; Intra-governmental relations; Cabinet Secretariat; Prime Minister's Office; Central Secretariat; Ministries and Departments; Boards; Commissions;
Attached offices; Field organizations.

5. **Plans and Priorities :**

Machinery of planning; Role, composition and functions of the Planning Commission and the National Development Council; 'Indicative' planning; Process of plan formulation at Union and State levels; Constitutional Amendments (1992) and decentralized planning for economic development and social justice.

6. **State Government and Administration :**

Union-State administrative, legislative and financial relations; Role of the Finance Commission; Governor; Chief Minister; Council of Ministers; Chief Secretary; State Secretariat; Directorates.

7. **District Administration since Independence :**

Changing role of the Collector; Union-State-local relations; Imperatives of development management and law and order administration; District administration and democratic decentralization.

8. **Civil Services :**

Constitutional position; Structure, recruitment, training and capacity building; Good governance initiatives; Code of conduct and discipline; Staff associations; Political rights; Grievance redressal mechanism; Civil service neutrality; Civil service activism.

9. **Financial Management :**

Budget as a political instrument; Parliamentary control of public expenditure; Role of finance ministry in monetary and fiscal area; Accounting techniques; Audit; Role of Controller General of Accounts and Comptroller and Auditor
General of India.

10. **Administrative Reforms since Independence :**

Major concerns; Important Committees and Commissions; Reforms in financial management and human resource development; Problems of implementation.

11. **Rural Development :**

Institutions and agencies since Independence; Rural development programmes: foci and strategies; Decentralization and Panchayati Raj; 73rd Constitutional amendment.

12. **Urban Local Government :**

Municipal governance: main features, structures, finance and problem areas; 74th Constitutional Amendment; Global-local debate; New localism; Development dynamics, politics and administration with special reference to city
management.

13. **Law and Order Administration:**

British legacy; National Police Commission; Investigative agencies; Role of Central and State Agencies including para military forces in maintenance of law and order and countering insurgency and terrorism; Criminalisation of politics and administration; Police-public relations; Reforms in Police.

14. **Significant issues in Indian Administration:**

Values in public service; Regulatory Commissions; National Human Rights Commission; Problems of administration in coalition regimes; Citizen administration interface; Corruption and administration; Disaster management.

SOCIOLOGY

PAPER– I

FUNDAMENTALS OF SOCIOLOGY

1. **Sociology - The Discipline:**

(a) Modernity and social changes in Europe and emergence of Sociology.

(b) Scope of the subject and comparison with other social sciences.

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DEPARTMENT OF PUBLIC ADMINISTRATION

SEMESTER-1/ MODULE - 1 (Credits)

BASICS OF PUBLIC ADMINISTRATION - I

SYLLABUS

UNIT-1 NATURE OF PUBLIC ADMINISTRATION

1. Meaning and Importance of Public Administration

Meaning of Administration and Public Administration, Definitions Nature - Integral view and Managerial view. Scope - POSDCORB view. Subject Matter view Importance of Public Administration in modern society, Importance of Public Administration in Developing Societies.

2. State and Evolution of Public Administration

Origin of the State - Administrative Organizations, Evolution of Modern Administration - Stages in the Evolution of Public Administration, Politics Administration Dichotomy,Principles of Administration, Era of Challenge, Crisis of Identity, Public Policy Perspective, Governance, E-governance.

UNIT-11 RELATIONSHIP WITH OTHER SOCIAL SCIENCES (20 HRS)

3. Public Administration and Law

Meaning, Definition of Law - Relationship of Public Administration with Law

4. Public Administration and Political Science

Meaning, Definition of Political Science, Dichotomy - Woodrow Wilson's Views, Interdependence.

5. Public Administration and Economics .

Meaning, Definition of Economics - Relationship of Public Administration with Economics.

6.Public Administration and Psychology

Meaning, Definition of Psychology - Relationship of Public Administration with Psychology

7. Public Administration and Sociology Meaning, Definition of Sociology - Relationship of Public Administration with Sociology

UNIT= II ORIENTAL AND CLASSICAL APPROACHES

8. Oriental Approach: Kautilya.

9. Classical Approach : Henry Fayol, Luther Gullick and Lyndall Urwick

Introduction and Contribution of Henry Fayol - Activities of an Industrial Undertaking, Elements of Administration, 14 Principles of Administration; Criticism; Introduction of Luther Gullick and Lyndall Urwicks Views on **Organizatio**n and Structure; Principles of Organization - Gullick and Urwick; Bases of Departmental Organization - 4 p's; Critical Evaluation

10. Scientific Management Approach: F.W.Taylor

Introduction, Meaning of Scientific Management, Principles, Techniques of Scientific Management, Criticism.

11.Bureaucratic Approach : Max Weber and Karl Marx Introduction of Max Weber, Meaning, Definition of Bureaucracy, factors responsible for the rise of Bureaucracy, Weber's Views on Authority - Traditional Authority, Charismatic Authority, Legal Rational AuthorityCharacteristics of Bureaucracy; Criticism: Introduction of Karl Marx; Karl Marx's Views on Bureaucracy.

UNIT-IV HUMAN RELATIONS AND BEHAVIOURAL APPROACHES

12. Human Relation Approach : Elton Mayo

Introduction of Elton Mayo - Initial Experiments, Hawthorne studies - Experiments - Illumination Experiment, Relay Assembly Test Room Experiment, Human Attitudes and Sentiments, Social Organization/Bank Wiring Experiment;

13. Chester Barnard and Herbert Simon's Decision-Making Theory

Introduction of Chester Barnard, Formal and Informal Organizations, Contribution - Satisfaction Equilibrium, Theory of Authority, Executive Functions: Criticism; Summary. Introduction of Simon, Simon's views on Classical Approach, Simon's Concept of Decision-Making, Stages of Decision-Making, Ends and Means, Rationality in Decision-Making; Criticism.

14.Socio Psychological Approach: Abraham Maslow, McGregor

Introduction, Maslow's Hierarchy of Needs - Physiological Needs, Security Needs. Social Needs, Esteem Needs, Self Actualization Needs; Criticism, douglas Mc. Gregor's Theory-X and Theory-Y, Managerial Assumption about Theory X and Theory-Y: Criticism, Summary

UNIT-V ECOLOGICAL AND SOCIAL JUSTICE APPROACHES

15 Administrative Ecology : F.W. Riggs

Introduction Meaning of Ecological Approach, Agraria-Industria Model: Fused-Prismatic Diffracted Model, Characteristics.

16.Social Justice Approach: B.R. Ambedkar

17. Jyothi Rao Phule

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GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD

Autonomous

DEPARTMENT OF PUBLIC ADMINISTRATION

SEMESTER - 1*1/ MO*DULE - II *(5* Credits)

DEVELOPMENT DYNAMICS AND EMERGING TRENDS - II

SYLLABUS

U

NIT - I COMPARATIVE AND DEVELOPMENT ADMINISTRATION

1.Comparative Administration

Introduction, Origin, Definition, Scope, Significance of Comparative Public Administration, Conclusion.

2. Development Administration

Introduction, Meaning and Definitions, Concept of Development Administration, **Attributes/Features** of Development Administration, Scope of Development *Adm*inistration, Challenges to Development Administration, Conclusion.

UNIT -II EMERGING TRENDS-

4. N*ew Pu*blic Administration - Minnowbrook - 1

Introduction - Rise and Growth of New Public Administration; The First MinnowBrook Conference-Goals/themes, Criticism.

5. N*ew* Public Administration - Minnowbrook - II

The Second MinnowBrook Conference - Features, Similarities and Dissimilarities between land JI

UNIT-11 MARKET THEORIES

7 Public Choice Approach

Introduction, The Background - Theoretical Traditions, Main Features or Recommendations of Public Choice Theory

8. *New* Public *M*anagement

Introduction, Evolution, New Public Management - Components, Salient Features, NPM as Neo Taylorism, Entrepreneurial Government, Conclusion.

UNIT - IV EMERGING TRENDS

9. Public Policy and Governance

Public Policy - Introduction, Meaning, Characteristics of Public Policy Making, Growing Importance of Public Policy. Governance Introduction, Meaning Features of Good Governance,

10. Role of Public Services in the Emergence and Development of New State of Telangana

UNIT-V EMERGING TRENDS - III

11. Present Status of Public Administration in the context of Globalization

Introduction, Meaning of Globalization, Ideological Perspectives Implications for Public Administration, Changing Role of Public Administration,

12. Post Modern Public Administration

Introduction, Origin, Meaning and Concepts in Post Modernism, Post Modern Public Administration

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independence of disturbances concept of structure and model for simultaneous equations, problem of identification-rank and order conditions of identifiability, two-stage least sauare method of estimation.

Present official statistical system in India relating to population, agriculture, industrial production, trade and prices, methods of collection of official statistics, their reliability and limitations, principal publications containing such statistics, various official agencies responsible for data collection and their main functions.

4. Demography and Psychometry :

Demographic data from census, registration, NSS other surveys, their limitations. and uses, definition, construction and uses of vital rates and ratios, measures of fertility, reproduction rates, morbidity rate, standardized death rate, complete and abridged life tables, construction of life tables from vital statistics and census returns, uses of life tables, logistic and other population growth curves, fitting a logistic curve, population projection, stable population, quasi-stable population, techniques in estimation of demographic parameters, standard classification by cause of death, health surveys and use of hospital statistics.

Methods of standardisation of scales and tests, Z-scores, standard scores, T-scores, percentile scores, intelligence quotient and its measurement and uses, validity and reliability of test scores and its determination, use of factor analysis and path analysis in psychometry.

ZOOLOGY

PAPER–I

1. Non-chordata and Chordata :

(a) Classification and relationship of various phyla up to subclasses: Acoelomate and Coelomate, Protostomes and Deuterostomes, Bilateria and Radiata; Status of Protista, Parazoa, Onychophora and Hemichordata; Symmetry.

(b) Protozoa: Locomotion, nutrition, reproduction, sex; General features and life history of *Paramaecium, Monocystis. Plasmodium* and *Leishmania.*

(c) Porifera: Skeleton, canal system and reproduction.

(d) Cnidaria: Polymorphism, defensive structures and their mechanism; coral reefs and their formation; metagenesis; general features and life history of *Obelia* and *Aurelia.*

(e) Platyhelminthes: Parasitic adaptation; general features and life history of Fasciola and Taenia and their-Pathogenic symptoms.

(f) Nemathelminthes: General features, life history, parasitic adaptation of Ascaris and*Wuchereria.*

(g) Annelida: Coelom and metamerism; modes of life in polychaetes; general features and life history of Nereis, earthworm and leach.

(h) Arthropoda: Larval forms and parasitism in Crustacea; vision and respiration in arthropods (Prawn, cockroach and scorpion); modification of mouth, parts in insects (cockroach, mosquito, housefly, honey bee and butterfly), metapmor phosis in insect and its hormonal regulation, socialbehaviour ofApis and termites.

(i) Molluscs: Feeding, respiration, locomotion, general features and life history of

Lamellidens, Pila and Sepia. Torsion and detorsion in gastropods.

(j) Echinodermata: Feeding, respiration, locomotion, larval forms, general features and life history of *Asterias*.

(k) Protochordata: Origin of chordates; general features and life history of *Branchiostoma* and *Herdmania*.

(l) Pisces: Respiration, locomotion and migration.

(m) Amphibia: Origin of tetrapods, parental care, paedomorphosis.

(n) Reptilia; Origin of reptiles, skull types, status of *Sphenodon* and crocodiles.

(o) Aves: Origin of birds, flight adaptation, migration.

(p) Mammalia: Origin of mammals, dentition, general features of egg laying mammals, pouchedmammals, aquatic mammals and primates, endocrine glands (pituitary, thyroid, parathyroid, adrenal, pancreas, gonads) and their interrelationships.

(q) Comparative functional anatomy of various systems of vertebrates. (integument and its derivatives, endoskeleton, locomotory organs, digestive system,. respiratory system, circulatory system including heart and aortic arches, urinogenital system, brain and sense organs (eye and ear).

2. Ecology :

(a) Biosphere: concept of biosphere; biomes, Biogeochemical cycles, Human induced changes in atmosphere including green house effect, ecological succession, biomes and ecotones, community ecology.

(b) Concept of ecosystem; structure and function of ecosystem, types of ecosystem, ecological succession, ecological adaptation.

(c) Population; characteristics, population dynamics, population stabilization.

(d) Biodiversity and diversity conservation of natural resources.

(e) Wildlife of India.

(f) Remote sensing for sustainable development.

(g) Environmental biodegradation; pollution and its impact on biosphere and its prevention.

3. Ethology :

(a) Behaviour: Sensory filtering, responsiveness, sign stimuli, learning, and memory, instinct, habituation, conditioning, imprinting.

(b) Role of hormones in drive; role of pheromones in alarm spreading; crypsis, predator detection, predator tactics, social hierarchies in primates, social organization in insects;

(c) Orientation, navigation, homing; biological rhythms: biological clock, tidal, seasonal and circadian rhythms.

(d) Methods of studying animal behaviour including sexual conflict, selfishness, kinship and altruism.

4. Economic Zoology :

(a) Apiculture, sericulture, lac culture, carp culture, pearl culture, prawn culture, vermiculture.

(b) Major infectious and communicable diseases (malaria, filaria, tuberculosis, cholera and AIDS) their vectors, pathogens and prevention.

(c) Cattle and livestock diseases, their pathogen (helminths) and vectors (ticks, mites, Tabanus, Stomoxys).

(d) Pests of sugar cane (*Pyrilla perpusiella*), oil seed *(Achaeajanata)* and rice *(Sitophilus oryzae).*

(e) Transgenic animals.

(f) Medical biotechnology, human genetic disease and genetic counselling, gene therapy.

(g) Forensic biotechnology.

5. Biostatistics :

Designing of experiments; null hypothesis; correlation, regression, distribution and measure of central
tendency, chi square, student-test, F-test (one-way & two-way F-test).

6. Instrumentation methods :

(a) Spectrophotometer, phase contrast and fluorescence microscopy, radioactive tracer, ultra centrifuge, gel . electrophoresis, PCR, ELISA, FISH and chromosome painting.

(b) Electron microscopy (TEM, SEM).

PAPER II

1. Cell Biology :

(a) Structure and function of cell and its organelles (nucleus, plasma membrane, mitochondria, Golgi bodies, endoplasmic reticulum, ribosomes and lysosomes), cell division (mitosis and meiosis), mitotic spindle and mitotic apparatus, chromosome movement chromosome type ploytene and lambrush, organization of chromatin, heterochromatin, Cell cycle regulation.

(b) Nucleic acid topology, DNA motif, DNA replication, transcription, RNA processing, translation, protein foldings and transport.

2. Genetics :

(a) Modern concept of gene, split gene, genetic regulation, genetic, code.

(b) Sex chromosomes and their evolution, sex determination in Drosophila and human.

(c) Mendel's laws of inheritance, recombination, linkage, multiple alleles, genetics of blood groups, pedigree analysis, hereditary diseases in human.

(d) Mutations and mutagenesis.

(e) Recombinant DNA technology, plasmid, cosmid, artificial chromosomes as vectors, transgenics, DNA cloning and whole animal cloning (principles and methods).

(f) Gene regulation and expression in prokaryotes and eukaryotes.

(g) Signal molecules, cell death, defects in signaling pathway and consequences.

(h) RFLP, RAPD and AFLF and application of RFLP in DNA finger-printing, ribozyme technologies, human genome project, genomics and protomics.

3. Evolution :

(a) Theories of origin of life.

(b) Theories of evolution; Natural selection, role of mutation in evolution, evolutionary patterns, molecular drive, mimicry, variation, isolation and speciation.

(c) Evolution of horse, elephant and human using fossil data.

(d) Hardy-Weinberg Law.

(e) Continental drift and distribution of animals.

4. Systematics :

Zoological nomenclature, international code, cladistics, molecular taxonomy and biodiversity.

5. Biochemistry :

(a) Structure and role of carbohydrates, fats, fatty acids, cholesterol, proteins and amino-acids, nucleic acids. Bioenergetics.

(b) Glycolysis and Krebs cycle, oxidation and reduction, oxidative phosphorylation; energy conservation and release, ATP, cycl cyclic AMP-its structure and role.

(c) Hormone classification (steroid and peptide hormones), biosynthesis and functions.

(d) Enzymes: types and mechanisms of action.

(e) Vitamins and co-enzymes.

(f) Immunoglobulin and immunity.

6. Physiology (with special reference to mammals) :

(a) Composition and constituents of blood; blood groups and Rh factor in human; factors and mechanism of coagulation; iron metabolism, acid-base balance, thermo regulation, anticoagulants.

(b) Haemoglobin: Composition, types and role in transport of oxygen and carbon dioxide.

(c) Digestion and absorption: Role of salivary glands, liver, pancreas and intestinal glands.

(d) Excretion: nephron and regulation of urine formation; osmo-regulation and excretory product.

(e) Muscles: Types, mechanism of contraction of skeletal muscles, effects of exercise on muscles.

(f) Neuron: nerve impulse—its conduction and synaptic transmission; neurotransmitters.

(g) Vision, hearing and olfaction in human.

(h) Physiology of reproduction puberty and menopause in human.

7. Developmental Biology :

(a) Gametogenesis; spermatogenesis, composition of semen, in vitro and in vivo capacitation of mammalian sperm, Oogenesis, totipotency; fertilization, morphogenesis and morphogen;

blastogeneis, establishment of body axes formation, fate map, gestulation in frog and chick; genes in development in chick homeotic genes, development of eye and heart, placenta in mammals.

(b) Cell lineage, cell to cell interaction, Genetic and induced teratogenesis, role of thyroxine in control of metamorphosisin amphibia, paedogenesis and neoteny, cell death, aging.

(c) Developmental genes in human, in vitro fertilization; and embryo transfer; cloning.

(d) Stem cells: Sources, types and their use in human welfare.

(e) Biogenetic law.

APPENDIX-IIA

INSTRUCTIONS TO THE CANDIDATES FOR FILLING ONLINE APPLICATIONS

- Candidates are required to apply Online using the website www.upsconline.nic.in.
- Salient features of the system of Online Application Form are given hereunder:
- Detailed instructions for filling up online applications are available on the above mentioned website.
- Candidates will be required to complete the Online Application Form containing two stages viz. Part-I and Part-II as per the instructions available in the above mentioned site through drop down menus.
- The candidates are required to pay a fee of Rs.100/- Rupees One Hundred only) [excepting SC/ST/ Female/Persons with Benchmark Disability candidates who are exempted from payment of fee] either by depositing the money in any branch of State Bank of India by cash, or by using net banking facility of State Bank of India or by using any Visa/Master/RuPay Credit/ Debit Card.
- Before start filling up Online Application, a candidate must have his photograph and signature duly scanned in the .jpg format in such a manner that each file should not exceed 300 KB each and must not be less than 20 KB in size for the photograph and signature.
- The candidate should have details of one Photo ID viz. Aadhar Card/ Voter Card / PAN Card / Passport/ Driving License / Any other photo ID card issued by the State / Central Government. The details of this photo ID will have to be provided by the candidate while filling up the online application form. The candidates will have to upload a scanned copy of the Photo ID whose details have been provided in the online application by him/her. This photo ID will be used for all future references and the candidate is advised to carry this ID while appearing for the examination.
- The Online applications (Part I and II) can be filled from 4th March, 2021 to 24th March, 2021 till 18:00 Hrs.
- Applicants should avoid submitting multiple applications. However, if due to any unavoidable circumstances, any applicant submits multiple applications then he/she must ensure that the applications with higher RID is complete in all respects.
- In case of multiple applications, the applications with higher RID shall be entertained by the Commission and fee paid against one RID shall not be adjusted against any other RID.
- The applicants must ensure that while filling their Application Form, they are providing their

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AUTONOMOUS (DBCS)
CBCS SYLLABUS SCHEME 2017 - 2018
B. Sc. I Year
I - SEMESTER
Core Paper – I
Animal Diversity – Invertebrates

Periods: 60 Max. Marks: 75

UNIT – I (15 Periods)

1.1 Brief history of Invertebrates
- 1.1.1 Kingdom Animalia
- 1.1.2 Brief history of Invertebrates

1.2 Protozoa
- 1.2.1 General characters
- 1.2.2 Classification up to classes with examples
- 1.2.3 Type study - *Elphidium*
- 1.2.4 Life cycle of *Plasmodium*
- 1.2.5 Locomotion, Reproduction and Diseases

1.3 Porifera
- 1.3.1 General characters
- 1.3.2 Classification of Porifera up to classes with examples
- 1.3.3 Type study - *Sycon*
- 1.3.4 Canal system in sponges and Spicules

UNIT – II (15 Periods)

2.1. Cnidaria
- 2.1.1 General characters
- 2.1.2 Classification of Cnidaria up to classes with examples
- 2.1.3 Type study - *Obelia*
- 2.1.4 Polymorphism in hydrozoa
- 2.1.5 Corals and coral reef formation

2.2 Platyhelminthes
- 2.1.1 General characters
- 2.1.2 Classification of Platyhelminthes up to classes with examples
- 2.1.3 Type study- *Schistosoma*

2.3 Nemathelminthes
- 2.3.1 General characters
- 2.3.2 Classification of Nemathelminthes up to classes with examples
- 2.3.3 Type study - *Dracunculus*
- 2.3.4 Parasitic Adaptations in Helminthes

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UNIT – III

3.1 Annelida (15 Periods)

3.1.1 General characters
3.1.2 Classification of Annelida up to classes with examples
3.1.3 Type study - *Hirudinaria granulosa*.
3.1.4 Evolutionary significance of Coelome and Coelomoducts and metamerism

3.2 Arthropoda

3.2.1 General characters
3.2.2 Classification of Arthropoda up to classes with examples
3.2.3 Type study - Prawn
3.2.4 Mouth parts of Insects
3.2.5 Insect metamorphosis
3.2.6 *Peripatus* - Structure and affinities

UNIT – IV

4.1 Mollusca (15 Periods)

4.1.1 General characters
4.1.2 Classification of Mollusca up to classes with examples
4.1.3 Type study - *Pila*
4.1.4 Pearl formation
4.1.5 Torsion and detorsion in gastropods

4.2 Echinodermata

4.2.1 General characters
4.2.2 Classification of Echinodermata up to classes with examples
4.2.3 Water vascular system in star fish
4.2.4 Echinoderm larvae and their significance

4.3 Hemichordata

4.3.1 General characters
4.3.2 Classification of Hemichordata up to classes with examples
4.3.3 *Balanoglossus* - Structure and affinities

Suggested Readings

1. L.H. Hyman *'The Invertebrates' Vol I, II and V.* – M.C. Graw Hill Company Ltd.
2. Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
3. E.L. Jordan and P.S. Verma *'Invertebrate Zoology'* S. Chand and Company
4. R.D. Barnes *'Invertebrate Zoology'* by: W.B. Saunders CO., 1986.
5. Barrington. E.J.W., *'Invertebrate structure and Function'* by ELBS.
6. P.S. Dhami and J.K. Dhami. Invertebrate Zoology. S. Chand and Co. New Delhi.
7. Parker, T.J. and Haswell *'A text book of Zoology'* by, W.A., Mac Millan Co. London.
8. Barnes, R.D. (1982). *Invertebrate Zoology*, V Edition"

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AUTONOMOUS (CBCS)
CBCS SYLLABUS SCHEDULE 2017 - 2018
B. Sc. I Year
II - SEMESTER
Core Paper – II
Ecology, Zoogeography and Animal Behavior

Periods: 60 Max. Marks: 75

UNIT – I (15Periods)

1.1 Ecology - I

1.1.1 Ecosystem structure and functions.
1.1.2 Types of Ecosystems –Aquatic and Terrestrial
1.1.3 Biogeochemical cycles - Nitrogen, Carbon, Phosphorus and Water
1.1.4 Energy flow in ecosystem.
1.1.5 Food chain, food web and ecological pyramids.
1.1.6 Animal Associations - Mutualism, commensalism, parasitism, competition, predation.

UNIT – II (15 Periods)

2.1 Ecology – II

2.1.1 Concept of Species, Population dynamics and Growth curves.
2.1.2 Community Structure and dynamics and Ecological Succession.
2.1.3 Ecological Adaptations.
2.1.4 Environmental Pollution – Sources, Effect and Control measures of Air, Water, Soil and Noise pollution.
2.1.5 Wildlife conservation - National parks and Sanctuaries of India, Endangered species.
2.1.6. Biodiversity and hotspots of Biodiversity in India.

UNIT – III (15 Periods)

3.1 Zoogeography

3.1.1 Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities
3.1.2 Wallace line, Discontinuous distribution
3.1.3. Continental Drift

UNIT – IV (15 Periods)

4.1 Animal Behaviour

4.1.1 Types of Behaviour: Innate and Acquired, Instinctive and Motivated behaviour
4.1.2 Taxes, Reflexes, Tropisms
4.1.3 Physiology and phylogeny of learning, trial and error learning, Imprinting, habituation, Classical conditioning, Instrumental conditioning
4.1.5 Social behavior, Communication, Pheromones
4.1.6 Biological rhythms, Biological clocks, Circadian rhythms

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AUTONOMOUS (CBCS)
CBCS SYLLABUS SCHEDULE 2017 – 2018
B.Sc. II Year
III - SEMESTER
Core Paper – III
Animal Diversity- Vertebrates and Developmental Biology

Periods: 60 Max. Marks: 75

UNIT – I Chordates Characters and Classification up to orders (15 Periods)

1.1. Urochordata, Cephalochordata, Cyclostomata

1.1.1. Salient features of Urochordata , Retrogressive metamorphosis and its significance, and Cephalochordata.
1.1.2. General characters of Cyclostomata.
1.1.3. General characters of Fishes.
1.1.4. General characters and Classification of Amphibia up to orders with examples.
1.1.5. General characters and Classification of Reptiles up to orders with examples.
1.1.6 General characters and Classification of Aves up to orders with examples.
1.1.7. General characters and Classification of Mammalia up to orders with examples

UNIT – II Chordate Modifications & Adaptations (15 Periods)

2.1. Fishes, Amphibians, Reptiles, Aves & Mammals

2.1.1. Types of Scales and Types of fins.
2.1.2. Migration in fishes.
2.1.3. Parental care in amphibian.
2.1.4. Migration in Birds.
2.1.5 Flight adaptation in Birds.
2.1.6 Dentition in mammals.
2.1.7 Aquatic adaptations in mammals.

UNIT – III Comparitive anatomy of vertebrates (*Scoliodon, Rana, Calotes , Columbia*) (15 Periods)

3.1.1. Digestive system in Vertebrates.
3.2.2. Respiratory system in Vertebrates.
3.2.3. Development of heart and aortic arches.
3.2.4. Structure of heart in Vertebrates.
3.2.5. Structure of Kidney in Vertebrates
3.2.6. Nervous system-Brain.
3.2.7. Reproductive System in Vertebrates.

UNIT – IV (15 Periods)

4.1 Developmental Biology and Embryology

4.1.1. Gametogenesis (Spermatogenesis and Oogenesis)
4.1.2. Fertilization
4.1.3. Types of eggs
4.1.4. Types of cleavages
4.1.5. Formation of Foetal membrane in chick embryo and their functions
4.1.6. Types and functions of Placenta in mammals
4.1.7. Regeneration in Turbellaria and Lizards

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AUTONOMOUS (CBCS)
CBCS SYLLABUS SCHEME W.E.F. - 2018
B.Sc. II Year
IV - SEMESTER
Core Paper – IV
Cell Biology, Genetics & Evolution

Periods: 60 Max. Marks: 75

UNIT – I (15 Periods)

1. Cell Biology
1.1. Cell theory, Differences of Prokaryotic and Eukaryotic cells
1.2. Structure and functions of plasma membrane : Structure , composition of Plasma membrane, fluid mosaic model.
1.3. Structure and functions of cell organelles- Endoplasmic reticulum, Golgi body , Ribosomes, Lysosomes , Mitochondria and Nucleus.
1.4 Chromosomes – Structure, types, giant chromosomes : Polytene and lamp brush chromosomes.
1.5 Cell Division - Mitosis, Meiosis.
1.6 Cell cycle and its regulation.

UNIT – II (15 Periods)

2. Molecular Biology
2.1 DNA (Deoxyribo Nucleic Acid) - Structure
2.2 RNA (Ribo Nucleic Acid) - Structure, types
2.3 DNA Replication
2.4 Protein Synthesis – Transcription and Translation
2.5 Gene Expression – Genetic Code; operon concept : Lac operon
2.6 Molecular Biology Techniques- Polymerase Chain Reaction.

UNIT – III (15 Periods)

3. Genetics
3.1 Mendals laws of Inheritance and Incomplete dominance, Co- dominance
3.2 Human Karyotyping and amniocentesis.
3.3. Sex determination and sex-linked inheritance
3.4 Chromosomal Mutations- Deletion, Duplication, Inversion, Translocation.
3.5. Inborn errors of metabolism : Alkaptonuria, Phenyl ketonuria, Glycogen storage disease.
3.7. Chromosomal disorders- Down syndrome, Patav's syndrome, Klinefelter's syndrome and Turners syndrome.

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UNIT – IV

4. Evolution

4.1. Theories of evolution: Lamarckism, Darwinism and Modern synthetic theory

4.2. Evidences of Evolution and Hardy Weinberg Law

4.3. Forces of Evolution: mutation, gene flow, genetic drift, and natural selection

4.4. Isolation: Pre-mating and post-mating isolating mechanisms

4.5. Speciation: Methods of speciation: Allopatric and sympatric

4.6. Causes and Role of Extinction in Evolution

Suggested readings

1. Lodish, Berk, Zipursky, Matsudaira, Baltimore, Darnell. *Molecular Cell Biology*. W.H. Freeman and company New York.
2. Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). *Principles of Genetics*. VIII Edition. Wiley India.
3. Snustad, D.P., Simmons, M.J. (2009). *Principles of Genetics*. V Edition. John Wiley and Sons Inc.
4. Klug, W.S., Cummings, M.R., Spencer, C.A. (2013). *Concepts of Genetics*. X Edition. Benjamin Cummings.
5. Russell, P. J. (2009). *Genetics - A Molecular Approach*. III Edition. Benjamin Cummings.
6. Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. *Introduction to Genetic Analysis*. IX Edition. W. H. Freeman and Co.
7. Ridley, M. (2004). *Evolution*. III Edition. Blackwell Publishing.
8. Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H. (2007). *Evolution*. Cold Spring Harbour Laboratory Press.
9. Hall, B. K. and Hallgrimsson, B. (2008). *Evolution*. IV Edition. Jones and Bartlett Publishers.
10. Campbell, N. A. and Reece J. B. (2011). *Biology*. IX Edition. Pearson, Benjamin Cummings.
11. Douglas, J. Futuyma (1997). *Evolutionary Biology*. Sinauer Associates.
12. Minkoff, E. (1983). *Evolutionary Biology*. Addison Wesley.
13. James D. Watson, Nancy H. Hopkins '*Molecular Biology of the Gene*'
14. Jan M. Savage. *Evolution*. 2nd ed, Oxford and IBH Publishing Co., New Delhi.
15. Gupta P.K. 'Genetics'

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